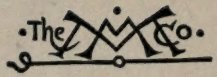
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INTRODUCTION TO VOCATIONAL EDUCATION



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INTRODUCTION

TO

VOCATIONAL EDUCATION

A STATEMENT OF FACTS AND PRINCIPLES RELATED TO THE VOCATIONAL ASPECTS OF EDUCATION BELOW COLLEGE GRADE

BY

DAVID SPENCE HILL, PH.D., LL.D.

PRESIDENT OF THE STATE UNIVERSITY OF NEW MEXICO

WITH AN INTRODUCTION

BY

M. V. O'SHEA

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EDITOR'S INTRODUCTION

One may safely predict that vocational training in some form will occupy a larger place in American education in the future than it has occupied in the past; but among teachers as well as laymen there is a lack of agreement regarding the scope, character, and value of vocational education. One reads articles on this subject in general and professional magazines and listens to addresses at educational meetings, and he is confused by the different claims which are made and the varying points of view which are presented. Some declare that we should train boys and girls specifically for definite occupations which they will enter the moment they leave school, while others oppose this view and hold that our training should concern only the general sciences or principles or skills upon which all occupations depend. Some advocate that vocational and general education should be rigidly distinguished the one from the other, while many persons protest that such a separation would undermine American democratic institutions. Again, one frequently hears devotees of vocational education say that a pupil will receive better discipline of mind and character in working with tools and shaping materials to definite purposes than he will in studying the so-called cultural subjects such as history, literature, foreign language, mathematics, and the like. But this proposition is vehemently denied by one group of teachers and educational theorists in particular, who maintain that vocational education is commercial and materialistic, that it restricts the pupil's vision, and that it fails to give him an understanding of human nature or interest in or sympathy with his fellows. So it is not to be wondered at that teachers as well as laymen are

perplexed when the advice given them by different counsellors is so conflicting.

In this volume President Hill discusses all these problems and others in a critical, unbiased manner. In order that the reader may view vocational education in the proper perspective he is first led to reflect on the purpose and function of education as a whole in a democratic country like ours. The author shows that the preservation of democracy is dependent upon a thoroughgoing, comprehensive educational program; and he shows further that in a democratic country the individual is entitled to an education which will prepare him to fulfill the duties of a citizen in the large sense of this term. When the reader gains the broad view of education presented here he readily concludes that preparation for a vocation is a phase, and a natural and necessary phase, of training for citizenship in a democracy.

Of course, problems concerning the adjustment of specific vocational work to more general studies have to be considered. The vocational needs of communities large and small have to be investigated. The intellectual and temperamental requirements for success in different vocations have to be taken into account. Problems relating to federal, state, and local support of vocational work have to be solved. President Hill treats all these matters in the light of extensive investigation and experimentation in vocational training. He has succeeded in establishing harmony between the general principles of vocational as related to other forms of education; and the concrete programs he presents are based upon the results of experiments that have been made in vocational education in agriculture, the mechanical industries, trade, business and commerce. A reader who has doubts regarding the value and need of vocational education will probably have his doubts dissipated if he will read this volume. If he has been overwhelmed by questions relating to the adjustment of vocational to cultural training he will see how the problems involved can be solved without sacrificing general

education while attaining the ends of effective vocational training.

The author of this volume is fortunate in being versed in the principles both of general and of vocational education, so that he is enabled to treat his theme with reference to the whole field of educational aims and values. He does not overstate the case for vocational education as some enthusiasts have done. He warns the reader that he must not expect too much from the introduction of vocational work into the schools. It is not a specific for all our educational ills. The need for it is very great; it has its place; but it cannot be made a substitute for general training.

A large amount of concrete material is brought together in this book. It is well organized and skillfully interpreted. Specific reference is made to all the best literature bearing upon the problems which are considered. The points of view presented in this literature are worked into the text of the various chapters, so that the reader will feel that the author has surveyed a large field and given him just the facts and principles that he should consider in order that he may comprehend the meaning and appreciate the value of vocational education as an integral part of a comprehensive educational program.

The book is designed to be of service to teachers and students of education as well as to the general reader. It is admirably suited for a text-book. The treatment is clear and logical throughout. The topics discussed in each chapter stand out distinctly and topical headings enable the reader to keep clearly in mind the problems under discussion in any part of the work. A brief summary of important conclusions is given at the close of each chapter. In order that the student may gain a firmer hold upon the principles developed in the text, he is required to test and apply these principles in a number of interesting, practical and stimulating exercises at the close of each chapter. He is thus given experience in *using* the principles he has learned

and in noting whether they can be advantageously employed in the community in which he is working or with which he is best acquainted.

M. V. O'Shea.

The University of Wisconsin,
4 November, 1919.

FOREWORD

In undertaking to write a book setting forth the important facts and principles concerning vocational education lower than college grade, the writer has encountered difficulties concerning the need to be met by such a book, a sound underlying philosophy, and the selection of suitable materials to be used as illustrations of practice. With regard to the need for such an introduction it seems that no adequate text exists from which the general reader, the rank and file of teachers, as well as those who, for the first time, are becoming acutely interested in the problems of vocational education, can obtain a comprehensive but condensed statement of essential principles, facts and concrete examples in this rapidly enlarging field. The writer, therefore, has endeavored to keep in mind these possible readers rather than the technical expert.

With regard to basal principles we note that it is popular these days to say that there must be no separation or division between liberal, cultural, and specific vocational education, but the explanation or reason for this indispensable solidarity are not frequently made plain. It is perhaps natural that a psychologist with considerable industrial experience should find an explanation or reason for the administrative unification of all kinds of public education in the fact that in the developmental processes of society *increased knowledge and skill without directing ideals which are altruistic and specifically democratic*, have been found totally inadequate for human welfare, whether we regard the individual or the race.

While this is no new doctrine it perhaps needs renewed emphasis to-day when skills and knowledge have been exercised

amazingly in the causation of a world war, and when the word *democracy* is upon millions of lips. Ethical idealism is a necessary step in conscious evolution, for evil as well as good may result from the acquisition of mere skill and knowledge. A measure of ethical idealism as a direct objective in all kinds of schools will involve realization of some of the choicest elements of liberal education—appreciation, discipline, information, physical well-being. The writer believes that American democracy in its broad outlines as understood by Washington, Jefferson, Lincoln, Roosevelt, Wilson, and, indeed, by the majority of intelligent American citizens is the most practical and general embodiment of the ethical idealism to be promulgated by public education.

The materials utilized for illustrative purposes in the making of our book have been of wide variety and some of them are quite inaccessible to the average reader. The writer, therefore, has included rather long lists of selected references at the end of each chapter and throughout has also quoted very liberally.

Frequent and long quotations have in some respects unavoidable objections, but we consider our use of them justifiable both for the purpose of bringing to the reader many concrete examples of the principles discussed, and also for the convenience of the reader, who may not be able to secure easily or quickly the original reports or books used. Certainly our method is at least better than the paste-and-scissors procedure used in making "source-books" where illustrative materials are loosely strung together, connected perhaps by a little comment of the editor.

In making these quotations and allusions the writer has endeavored to give due acknowledgment by reference to the author or material mentioned. However, in seeking to encompass an extreme range of facts bearing upon our general theme, it is probable that there have been unintentional omissions.

The aim of our undertaking, which has been steadily to furnish an introduction to the study of the vocational aspects of public education, has forced us to make the book one of considerable scope. We are supposing that the reader will be interested in obtaining a bird's-eye view of *the relation of public education to democracy*, of the auspices *of vocational education in its historical development*, of recent *federal legislation*, of those aspects of education called *agricultural, industrial and trade, commercial*, and of the *vocational education pertaining to girls and women*. We deem it of especial importance to point out the significant facts and principles which are exhibited in the contemporary movements for *the application of the research method in behalf of both our schools and industry*. This movement is developing rapidly and although we believe that we have set forth the most significant points of interest and the literature of the subject, nevertheless, this chapter of the book must be regarded strictly in the light of an introduction to a vast and important field. The same reservation is of course made in writing upon the different topics of *applied psychology*.

The writer is indebted to the publishers of the *Popular Science Monthly*, of *School and Society*, of *School and Home Education*, and of *McClure's Magazine* for permission to use portions of articles which have been published by them. He expresses especially his indebtedness to the following gentlemen for looking over certain chapters of the manuscript: Dean Eugene Davenport, Dean Kendrick C. Babcock, and Professor Maurice H. Robinson of the University of Illinois. Professor M. V. O'Shea of the University of Wisconsin has examined the entire manuscript and has made numerous helpful suggestions. Professor Robert C. Whitford, now of Knox College, has pointed out many errors during the preparation of the original manuscript, and practically the entire work of copying has been done patiently by Miss Winifred Amos. The writer

is appreciative of the opportunity to do his share of the work during his former engagement at the University of Illinois.

DAVID S. HILL.

Albuquerque, N. M.,
December, 1919.

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INTRODUCTION TO VOCATIONAL EDUCATION

INTRODUCTION TO VOCATIONAL EDUCATION

CHAPTER I

SAFEGUARDING AMERICAN DEMOCRACY

The Basis of Society: Preliminary considerations; enduring elements; idealism in America.

Education Indispensable in Democracy: The reasons—(*a*) security of the state; (*b*) to increase knowledge and skill; (*c*) a birthright; (*d*) power and money essential; (*e*) school an aspect of democracy.

The Meaning of Education: What is education? factors in education; education complex; universal education.

Making Education Democratic: Individualism *vs.* collectivism; coöperation *vs.* force; progress against obstacles; needed reorganizations; universities produce leaders; vision for men in industry.

Teaching Democracy: Democracy and humanism; methods in securing ideals—(1) ultimate, single control; (2) didactic assertion; (3) curriculum changes; (4) expression or practice; (5) consciously developed attitudes; (6) emotionalism; (7) specific education for patriotism; (8) health; (9) attendance, and cure of elimination; (10) vocational education not mere addition.

Summary. Problems. Selected References.

The Basis of Society

Preliminary considerations. In our study of the facts and principles underlying the movement for vocational education lower than college grade, we shall encounter controversial points, considerable descriptive matter illustrative of contemporary practice but difficult of interpretation, and many unsolved problems. The writer will be content if, in addition to the presentation of some facts and sound prin-

ciples deduced therefrom, he succeeds in stimulating in the reader a scientific as well as a sympathetic attitude toward these same unsolved problems of an important and interesting phase of public education. To become conscious of these problems and to bring to each question an attitude of open-mindedness and of kindly understanding, are steps more vital for progress than to offer as remedies ready-made solutions or pedagogical recipes. It is not easy to remove difficulties that have their deep root both in the characteristics of human nature and also in existing social and political conditions.

One is tempted in trying to lead the reader toward a better knowledge of the vocational movement in education, to tarry long in the discussion of relevant facts concerning these characteristics of human nature, and of the underlying social and political conditions which environ us. Of course, a thoroughgoing appraisal of systems of public education can be made only in the light of such preliminary considerations. We must be content, however, in the immediately following pages merely to suggest some of the psychological, social, and political starting points fundamental for our later and more descriptive presentations, and also to explain the various meanings attached to the term vocational education. All this we must try to do very briefly in the course of the first four or five chapters; then we may press on in the subsequent chapters to the exposition of the more specific and concrete matters of agricultural, industrial, commercial, home-making, and other types of vocational education. The effort in the twelfth chapter to develop a technic for the practical application of the research-method will suggest fascinating and profitable fields for further study, revealing still more unsolved problems, but yielding the promise of a way of successful attack upon them through the application of scientific procedure. Finally, in view of widespread interest in the subject, we shall attempt an appraisal of psychology applied to industrial and educational problems.

It will be difficult for a student following the above plan to keep quite distinct the matter that is controversial from that which is descriptive or expository. In this present chapter, the writer sets forth arguments that might be denied by some who are not old-fashioned Americans, but he sets these arguments forth, believing that the assumptions involved therein are fundamental to the perpetuation of true democracy and ethical idealism. The reader who may not accept his assumptions will at least be awakened to a consciousness of the basal issues involved, and will therefore be better prepared to weigh the claims of the vocational emphasis as contrasted with the cultural and disciplinary tradition in public education. All may agree that there are too many advocates of education, radical or reactionary, who have no adequate philosophy or background for their propaganda.

Having in mind the necessity of discriminating in this field between opinion and fact, we may now proceed in the present chapter to consider certain basal facts about the evolution of knowledge, human skill, and ethical standards. These facts attest the necessity of developing ideals as well as skill and knowledge, if men are to live in peaceful society. Reasons follow to show that general public education in our democracy must have concerted support in order that knowledge, skill, and also ethical, altruistic standards, all three being indispensable for human welfare, may increase. Finally, in the present chapter we shall sum up the agencies or means useful in effecting this combination of knowledge, skill, and ethical idealism in our American democracy.

Enduring elements. A combination of this kind is one of the foundation-stones of civilization. Buildings, farms, machinery, railroads, ships, guns, laboratories, and banks are necessary although vanishing utensils and products of society, but the essential and permanent element of democratic society is *an ideal*. No present exigency should be permitted to separate

permanently the idealistic and the practical in an education supported by democracy—whether the "practical" be of the manual, or of the intellectual types of training. This is a good principle to set down at the outset of a discussion of a form of education that has much to do with production, the making of things, and the control of physical and chemical forces.(13)

Emerging from primitive life mankind with the slow accumulation of knowledge and skill gained power. With skill came dominion over fire, light, the forest, the sea, and wild beasts; with added knowledge, disease and pestilences were also overcome, pain was diminished by anesthesia, and duration of life prolonged. Especially has the development of trained consciousness vanquished superstitions, and fear. However, knowledge and skill brought evils to mankind along with good. There are several kinds of evils and unhappiness that come to the race and to the individual with the evolution of knowledge: E. g., the man of thought foresees the inevitable course of nature in decay and death,—and these realizations may bring unhappiness in hours of leisure. Rousseau thought fore-knowledge to be a true source of all our miseries. Ebbinghaus thinks that art and music had one primitive beginning in the reaction from this unhappiness, as well as in the expression of excessive or playful energies. Some formal expressions of religion may have begun in the reactions of man's consciousness of his relative minuteness and helplessness in the universe.(8)

Still another unhappiness which results from knowledge, and for which society also has evolved a corresponding antidote, is the misuse of accrued knowledge and skill and power by the more fortunate or the stronger individuals and groups of men who follow low ideals or none, and exploit and even enslave their fellows. Thence came slavery, caste, robbery, wars of aggrandizement—with their attendant long trains of evils, such as cruelty, ignorance, poverty, disease, weakness, and degeneration. However, the misuse of knowledge, skill, and power

through centuries of costly experience has taught mankind that the majority must agree to unite in suppressing evil-doing. Ideals of conduct must be both defined and also maintained, as well as skill and knowledge. Some of these universalized agreements of society are written visibly in constitutions, statutes, and laws. Other consensuses regarding right conduct are invisible yet potent forces in the form of customs, traditions, sentiments, and aims and ideals—the last being definite products of creative imagination.

To us in America the word democracy is the symbol for all that is best in common agreement, sentiment, and determination of a collective people—whether expressed in book or in conscience. This solidarity of understanding and approval and feeling constitutes the psychic basis of democracy, and is the most real and durable element of the structure. The essential fact stands out clearly that neither knowledge nor skill nor both combined, can be sufficient for human welfare, especially in a democracy where the good of the people is cherished. Ability to make and enforce law, imagination to create aims and good ideals, and sentiments and emotions that react habitually to the true, beautiful and good—these are quite as essential as accumulation of fact, or as specialized accuracy and speed of coördinated brain, eye, and hand. Thus there is a psychological and ethical explanation for the development of a true vocational education to inculcate a combination of knowledge, skill, and idealistic sentiment—a basis indicated emphatically as indispensable in the hard experiences of the race. The unimaginable suffering of the World War is a result that accrued where knowledge and skill, without controlling aims and ideals truly democratic, were unleashed upon the world.

Idealism in America. The democracy of the United States in points of magnitude, duration, economic progress, and realization of individual liberty, surpasses the restricted Athenian democracy, is rivaled by superb France, and Switzerland, and

shares the strong spirit of our brothers in Canada and England. Not alone is it wealth, potential and achieved, that drew here men of all races. We whose fathers have dwelt in America longest know that in our constitution and statutes, and habituated in our every-day thinking, there are steadfast principles such as these: In the life of the individual there will be liberty compatible with the welfare of the majority of the inhabitants; freedom of personal development and expression will be maintained, but standards of conduct will be established and protected for the betterment of society. The zealous protection of women and children is seen in unremitting efforts toward progressive legislation to meet changing social and economic conditions, and there is cherished a survival of the nobler sentiments of chivalry as concerns women and children. Equality of opportunity is a right, and coöperation in civic responsibility is a duty, in American democracy. Life in its fullness, true liberty, and the pursuit of happiness based on health, knowledge, and achievement, are as yet found nowhere on this globe, but all these surely have been nearest to realization in the United States and in Canada, blessed of all countries of a world returned temporarily to fierce struggle for elemental things. In the social consciousness of seasoned Americans we can also discern, aside from mawkish sentimentality, a collective, emotional reaction in which are mingled sentiments of admiration for our soil, our mountains, our lakes, our mines, and forests—for the very land itself and for the pioneer-conquerors of it, along with convictions held in common concerning the essentials of government and of union, that make for determined solidarity and brotherhood, a true patriotism for both peace and war.

Education Indispensable in Democracy

The reasons. If the essence of democracy consists of these habitual sentiments and convictions which are nourished in

common by the increasing millions of our population, who nevertheless are more and more remote in time from the aggressive spirits who established these principles in our land, then measures can be undertaken by us who now live, for the strengthening of such habits of mind until they become increasingly permanent. The perpetuity of the elements of our democracy will be uncertain, unless there be effective preparation to train each new generation, and all newcomers, for social participation in the manifold phases of modern life, as well as for industrial efficiency. The best instrument for this undertaking is the public educational system, from kindergarten through university.

There are some persons who are still lukewarm or dubious about the mission or the efficacy of the public school supported as a fundamental phase of democratic life. Echoes survive of the voice of Herbert Spencer opposing education of a man's children by the government; and of J. S. Mill contending that education should be at the charge of the parent. On the other hand, strong notes for support and for fearless readjustments of public education are being sounded to-day by trained schoolmen and women of enlightened, democratic spirit. One could easily adduce many expressions from publicists and American statesmen firmly asserting the principle of the oneness of democracy and education. For example, "Educate and inform the whole mass of the people," said Thomas Jefferson, "no other sure foundation can be devised for the preservation of freedom and happiness." We prefer for our present purpose to tabulate in succession (a, b, c, d, e) the reasons why a government of true democracy, whatever may be its various administrative subdivisions, supports public education.

Reasons why the incorporated people should establish and maintain education have been formulated repeatedly by men of renown, from Plato to Woodrow Wilson.(5) A type of education is desirable for civilization even in a monarchy, but that universal education in a democracy is imperative appears from

this summary of reasons, which deserve frequent repetition before the youth of this country, and indeed before many peoples.

(a) *Security of the state.* Since each child born is a possible factor either toward betterment or destruction of the state, the state in self-protection must be attentive to the conditions affecting the maturing of the plastic generation.(23) The suffrage, the referendum, and the necessity for prevention of crime and degeneracy, each renders education an indispensable measure for social security upon the part of the state.

(b) *To increase knowledge and skill.* The accumulation of knowledge and skill has made man a master of fire and electricity. Through knowledge he has dispelled savage superstition, and conquered many plagues, and filled hours of leisure with music, art, and philosophy. The continuance of prosperity, sustenance, adequate supply of food and clothing and shelter for our enlarging population, measures of military and naval defense, competition in commerce and industry, the disappearance of apprenticeship, the necessity of transmission of culture and morality and law to our successors—all these vital conditions render necessary the support of public education by concerted action of the people, in order to increase knowledge and skill.

(c) *A birthright.* It is a fact in common experience, commemorated by poets more remote than Lucretius, and attested by biology and psychology, that the human being is peculiarly helpless in infancy, a being immature, sensitively responsive to physical or psychic stimuli which environ him at birth and during infancy, childhood, and adolescence. As the lungs have a right to air, the stomach to food, eyes to sunlight—a democratic view of life is that every child has a birthright to that environment best suited to his potentially useful capacities. The state controls this general environment into which the child is born perforce (16). Therefore the state must assure to every child his birthright, an environment indicated best, we believe, by the concept "education," in its broad implication.

(d) *Power and money essential.* The task of public education is so stupendous that only by the authority, powers, and resources of government can it be established and maintained. (23) The leadership and supreme authority in public education upon the part of authorized organization of the whole people, are not inconsistent with the operation of other useful agencies in education, private or denominational, conducted compatibly with the sound principles of humanism; principles which, we have faith to believe, are at the basis of true Americanism. The state has power and money to support education, and the state alone can enforce universal standards regarding the health, the intellectual, and the industrial training, and ethical rules, standards which are both incentives and also safeguards in the development of all the people.

(e) *School an aspect of democracy.* Public education, in a sense, is, in fact, an aspect of democracy, one inevitable form of its expression.

The Meaning of Education

What is education? Better realization of the possibilities of democracy in assuring life, liberty, and the pursuit of happiness, and more money for the school, might result from general deliberation upon the above often-stated reasons for the support of education by every phase of our organized people, be it federal, state, county, township, municipality, or other contributory agencies. It is opportune in this connection also to bring in rapid review before the people certain basal facts about the nature of education, its instruments, the difficulties, and the present status of this our greatest American undertaking. One could compile a small volume to include attempts at defining education. We may agree to indicate by the term the attempt to modify human beings in accordance with chosen ideals and aims.(22)

Factors in education. The broadening relations of education emphasize the truth that many elements and changes other than the teacher and the school are operative in modifying the human organism. It is necessary only to hint at the possible effects of climate, heat, cold, moisture, dryness, proximity to or remoteness from the sea, disease, occupation, the family, the crowd, the church, the press, the theater, peace, and war upon individuals, groups, or races. So impressive is the magnitude of modern educational machinery that the incessant operation of these other agencies of change in innumerable forms may be forgotten, if we neglect the fundamental characteristics of formal education as an undertaking to modify, to alter, to develop, or to suppress, the original inheritances of man's nature. We may not be able directly to cause or to prevent various changes in the young generation dwelling daily for some years within the schoolhouse. It is convenient, when we define education as a formal process, to say that it is an effort to cause or to prevent modifications in human beings in accordance with a chosen aim or ideal, but at best, we can only manipulate stimuli and environment in a manner conducive to the desired changes in the human organism.

Education complex. Education therefore is not properly a daily task for a sleepy pedagogue, a pedant, or a mere wage-earner. There are profound problems in physics, chemistry, zoölogy, physiology, psychology, hygiene, as well as in ethics, economics, industry, and occupations before the professional educator of to-morrow. Other subjects at this point are suggested which concern the more perfect realization of an educational system, considered as an integral part of our developing structure of democracy. These subjects are: The nature of universal education, and the organization and practical administration of universal education compatible with individualism and avoidance of waste, i. e., the problems of making education democratic and of teaching democracy.

Universal education. Public education, as a deliberate attempt upon the part of the state to mold human beings, can have no narrow aim, restricted ideals, or be exclusive privilege of caste, of sect, of wealth, or of poverty. The process touches all ages of men, both sexes, all races, and is to be articulated with all socially desirable occupations of agriculture, forestry, animal husbandry; of the extraction of minerals; of the manufacturing and mechanical industries of the factory, building, or hand-trades; of commerce; of public service; of professional service; of domestic and personal activities; and with the merely clerical occupations.

Universal education includes in its scope the appropriate training in skill, or in knowledge, of those human beings who exhibit extreme individual variation from their kind, whether the variation be destructive or abnormal, or one of unusual mental capacity, the supernormal, or of the defective—such as the feeble-minded, the confirmed delinquent; and it includes training of the blind, and the deaf, and the crippled, whether they be victims of birth, of industrial accident, or of war. There are to-day kindergartens, primary grades, grammar grades, intermediate schools, junior high schools, classical high schools, commercial high schools, technical high schools, industrial, trade, continuation, part-time, and evening schools. Scores of differentiations in school work to adapt the school to individual and community need are familiar to us, e. g., open-air classes, oral teaching of the deaf, classes for epileptics, schools using the preventive mode of attack upon vice and crime. And in addition, utilized by a fractional percentage of our population (less than one per cent), there are the colleges, the professional schools, and the universities. Whatever may be one's verbal definition of universal education, a glimpse of this list of typical kinds of educational machinery at work in our country reveals the presence of multitudinous, formal instruments of education which, if they were well coördinated for

the higher purposes of democracy conceived as organized humanism, would constitute a near-realization of universal education in practice.

Naming solely in general terms the kinds of schools which we have developed in varied forms to meet different needs, is not sufficient to indicate fully the complexity and the magnitude of the task of maintaining practically a system of universal education. Within each school class there are differentiated types of groups and of individuals. The skillful adjustment of instruction to individual differences and to the inevitable groupings of the population are incessant difficulties in public education. Even pupils of the same chronological age differ in anatomical and physiological maturity, in mental growth, capacity and interests, and we shall illustrate in succeeding pages the manifold groupings into which mankind falls even in a relatively homogeneous population.

Making Education Democratic

Individualism vs. collectivism. Both collective striving for universal education and also the vigorous expression of individualism are witnessed in our forms of educational machinery. The present status is not without danger, lest conflict, waste, and chaos result from the failure to coördinate in practical administration the whole school machinery of the nation, through the power of broadly democratic and educational ideals, clarified and made controlling in the thinking, customs, and laws of our swelling population. Educators often have wasted time in debates about words. The difficulties of some teachers in mental reconstruction, in surrendering personal prejudices (or, at least, in keeping in proper relation to each other those educational aims or ends which are immediate or proximate in nature, and in keeping them distinct from those ends, aims, and ideals which are consummate or ultimate in nature), are persistent obstructions to better realization of

universal education. All of the traditional notions of formal and of mental discipline, e. g., *culture*, *development*, *perfection*, *utility*, *knowledge*, etc., as aims in education still have their place, and, clarified, doubtless will continue, but they will be subordinated to a high ultimate aim for education, an education intended to produce men and women who live in health, in economic productivity, in civic intelligence, in observance of standards of conduct, and in the happiness of brotherhood, whatever be the occupation or status of the individual. Neither crass materialism, on the one hand, nor obsolete asceticism, on the other, will suffice in place of this unifying conception of the mission of public education.

An individualism bringing personal isolation—in essence selfishness and fear—is as incompatible with American democracy as a radical socialism and collectivism which knows not the individual. In the struggle to define and maintain the sane and righteous balance between the demands of the individual and of the group, comes the trial of democracy. A critic of the democracies so labelled in history, thinks that popular governments imply a breaking up of political power into morsels, and the giving to each person an infinitesimally small portion. "They (democracies) rest upon universal suffrage, which is the natural basis of tyranny; they are unfavorable to intellectual progress and the advance of scientific truth; they lack stability; and they are governments by the ignorant and unintelligent." Further, declares Maine, "By a wise constitution democracy may be made as calm as the water in a great artificial reservoir; but if there is a weak point anywhere in its structure, the mighty force which it controls will burst through it and spread destruction far and near."(11) Maine's fear of democracy seems based upon the assumption that prejudice and ignorance render the masses more dangerous than the controlling few, because the masses will run counter to scientific conclusions—and the agonies of Russia seem to support the

theory. This expressed principle, however, illustrates first, the necessity of universal, public education including inculcation of sentiments of liberty, equality, fraternity, loyalty—the excellent prejudices of democracy, and secondly, the fact that they who control, be they representatives or be they monarchs, must be animated by democratic ideals to guide the uses of science at their disposal. The public education we have achieved in America, and the encouraging success of our democracy now adequately tested, demonstrate that we have learned how to upbuild and to perpetuate democracy through the instruments of public education and of ideals made potent in high places.

Coöperation vs. force. "An order in an autocracy is a command, in a democracy it is a call to coöperation"—declares a modern phrase-maker. The effective organization, coördination, and practical administration of all the resources of investment, income, officials, and teachers enlisted in public education, might be promoted better through the spread of democratic idealism, and of clear-cut comprehensions of educational science, than by the sudden centralizing of political power in education, or through undemocratic imposition of force by the Federal Government. Thus may we hope to bring into more effective articulation within our states the diverse forms of education maintained by the people, and also to include in this articulation more satisfactorily to all concerned the educational instruments of the church and of endowed institutions.

The seemingly unsatisfactory organization of American education can be understood only by reference to conditions of its origin and tremendous growth. Not referred to in the Federal Constitution, public education was an interest left to the states. The development of federal policies toward education has been slow but positive, as evinced by land grants, the establishment of the Bureau of Education, the passage of the Morrill Act and the Smith-Lever Act, the direct participation of governmental

authorities in the educational work of Hawaii, the Philippines, Alaska, and Porto Rico, and by the enactment recently of the Smith-Hughes Act. We interpret the federal policy as one of encouragement, enlightenment, and aid toward education. Direction towards uniformity and minimal essentials, where these are desirable, without cramping individual or local initiative, is an increasing tendency discerned especially in the Smith-Hughes Act, the administration of which is being observed keenly by teachers and citizens.

Progress against obstacles. Of interest are the present status and the evolution of characteristic state, county, township, town and municipal organizations of education within our forty-eight states. Public education has developed in spite of early conditions adverse to education—the primitive conditions of the wilderness, poverty, persistent ideas of caste, the inevitable development of crazed radicals and of stubborn obstructionists among our millions of people, and amid the rapid economic changes due to exploration, increasing population, and the production and expenditure of amazing wealth. Students of educational organization, surveying to-day the failures and successes in our administration of education, are able with some certitude to draw the outlines of better, if not ideal, organization of the forces of state, county, and municipality.

Needed reorganizations. The important distinctions between the lay function of educational control—that of legislation, consideration of policies, finance, and the employment of experts, and the professional function—that of the expert executive, the director of departments, supervisors, principals, or teachers, are distinctions being better recognized. Boards and superintendents and teachers are improving. Nevertheless, the reign of the district trustee is not ended. To the number of thirty thousand and more in some states they exert in zealous holding to an exploded notion of democracy, a varied and often paralyzing educational control of the schools. Rural education

suffers from the delay in sensible county reorganization. Municipalities are showing encouraging tendencies toward the small school board appointed, or elected at large, and the services of a trained and professional superintendent; but there are cities where schools still remain under the domination of political rings, and there are, alas, a few superintendents in name who are tools of cliques, excrescences upon both education and American democracy.

Universities produce leaders. Statistics show that the leadership in great things as a rule has been held by men and women trained in our higher institutions of learning. This is a tribute to the efficiency of the hundreds of noble men and women who have given their lives to labors of instruction and research within our higher institutions. Their production of leadership does not seem to diminish. However, our universities, state, endowed, and denominational, and our colleges, and normal schools, are undergoing scrutiny, questioning, and, in some instances, wholesome transformation. In the process of self-examination some strange products of systems of selection of men by mere criteria of degrees and publications, or worse, by sole criteria of personal, social, or political influence, are occasionally uncovered. Here and there men are found in normal schools, colleges, and universities, posing as peculiarly fit teachers of chosen youths in this democratic nation, men who might be employed better at simple manual labor, or in clerkships. Egotism, and oracularism parading in the name of science, complacency in the guise of the professional philosopher, ignorance and bad manners in the guise of a type of culture, anti-American, and anti-social notions flaunted in the name of progress, small souls striving for livelihood, conspicuity, or leadership, whether in lower or in higher schools—such as these are aliens in the sphere of education for democracy.

Vision for men in industry. A few conspicuous men in industry have attempted publicly to belittle the work of the

public school. Abuses in the schools exist, and these abuses demand correction. Many of the criticisms of individuals doubtless result from petty conceptions, ignorance, and wrong evaluation of personal successes. Thousands of men in industry and in professions directly serve the schools, as members of school boards, giving unselfishly of time and thought for the public welfare. Labor unions, and corporations, each group in turn, have established special vocational schools to meet urgent needs, or have entered into coöperative agreements with existing public schools, thus evincing faith in formal education. Millions of dollars of taxation are contributed annually by citizens for the support of the schools—a matter of accepted custom and law.

Not only do schools need transformation, but industry also needs modification continually to conform to the ideals of democracy. A fair distribution of earnings between employer and employee, reasonable hours of labor, precautions against the evils of narrow specialization, and of "speeding up" processes, as they affect the individual, and the assurance of safety against industrial accidents and diseases of occupation, the protection of women and children in industry—all these are desirable objects in industry, as well as are high-powered efficiency, and increased production. Education for workers in a democracy demands recognition of these objects, but in order to concede them, men who control both industries and schools must have far-reaching vision of the social significance of occupation.

A real danger toward perpetuation of a caste tendency in our existing industrial system is thus expressed by the philosopher John Dewey:

> Sentimentally, it may seem harsh to say that the greatest evil of the present régime is not found in poverty and in the suffering which it entails, but in the fact that so many persons have callings which make no appeal to them, which are pursued simply for the money reward that accrues. For such callings constantly provoke one to aversion,

ill will, and a desire to slight and evade. Neither men's hearts nor their minds are in their work. On the other hand, those who are not only much better off in worldly goods, but who are in excessive, if not monopolistic, control of the activities of the many are shut off from equality and generality of social intercourse. They are stimulated to pursuits of indulgence and display; they try to make up for the distance which separates them from others by the impression of force and superior possession and enjoyment which they can make upon others.

It would be quite possible for a narrowly conceived scheme of vocational education to perpetuate this division in a hardened form. Taking its stand upon a dogma of social predestination, it would assume that some are to continue to be wage earners under economic conditions like the present, and would aim simply to give them what is termed a trade education—that is, greater technical efficiency. Technical proficiency is often sadly lacking, and is surely desirable on all accounts—not merely for the sake of the production of better goods at less cost, but for the greater happiness found in work. For no one cares for what one cannot half do. But there is a great difference between a proficiency limited to immediate work, and a competency extended to insight into its social bearings; between efficiency in carrying out the plans of others and in forming one's own. At present, intellectual and emotional limitation characterizes both the employing and the employed class.(7)

There are four vivid characteristics of our American education: First, the magnitude of present educational efforts, whether estimated by the twenty millions of young lives enrolled, or by the eight hundred millions of dollars expended yearly for education; secondly, the variability in educational organizations, administration, methods, and expense; thirdly, the persistence of fundamental convictions, aspirations, and faith toward education in the minds of our one hundred millions of people, most of whom are toilers; fourth, the conflict between efficiency aims and ethical idealism. Now that the pillars of civilization have trembled, well may we pause to reflect upon our educational system as it affects democracy, to examine

present democracy as affecting education, and to consider both education and democracy in the light of human experience, in order that we may renew our zeal for our country and our belief in humanity. There should be no permanent gap between democratic idealism and any form of public education.

Teaching Democracy

Democracy and humanism. We desire renewed coöperation by all agencies in education, by citizens and by teachers, the press, the churches, the homes, and industrial organizations, in order to conduct an education suited for life in our American democracy, which to-day presents the greatest opportunity in the world's history wherein to work out the ideals of human brotherhood. By a turning to practical idealism in our schools, we can all work profitably for democracy. If teachers, writers, preachers, industrial leaders, philosophers, and psychologists, would help to disseminate to the people clearer, simpler conceptions about the nature of education and its inevitable relations to the fundamentals of democracy, they would render a patriotic service the results of which should be enduring.

We have referred to American democracy as symbolizing all that is best in common agreement, sentiment, and determination of a collective people who have tested the worth of democracy through the storms of more than a century. This experience and contemporary world events increase our confidence in the system and awaken forethought to safeguard and improve American democracy. There has been the matter of overcoming vicious idealism, autocracy, Prussian militarism, which have brought cataclysms. There is now amongst us some anarchism, and a pestilential propaganda called bolshevism. It is opportune to take up the matter of methods and means for perpetuating the best American habits, convictions, sentiments, and attitudes in the mind of the present and future public.

These mental conditions constitute the foundation rock of our democracy.

The schools, as well as the Army and Navy, are a tremendous engine for defense, and for effecting changes in human nature in times both of war and of peace. An idea inculcated firmly in the minds of the Prussian children of twenty or thirty years ago ("With God, for King and Fatherland") found atrocious expression in Belgium and on the high seas. In America we are reaping to-day the rich mental and social fruitage of the convictions concerning "Liberty, Equality, Fraternity" inculcated in the minds of our children of a score of years ago, and of their fathers. Who can predict adequately, therefore, the ultimate results for humanity in the lives of the unnumbered millions yet to be born, if the schools of to-day should effectually inculcate the purest ideals of democracy refined in the fires of the century and a half of our national existence and in the recent experiences of the World War?

Methods in securing ideals. Opportunity exists for those who are expert in the technique of instruction to discover and to evaluate all available methods of inculcating democratic ideals as consciously selected and followed goals in individual life. It is a phase of the complex problem of moral education, but the undertaking concerns in detail everything done in the school. Given the content for instruction in ideals the problem is to devise practical methods for making our ideals of democracy both conscious and also controlling in human lives.

Great has been the demand for technique in imparting elementary knowledge, and the present emphasis upon the vocational aspects of education now calls imperatively upon the teaching body for economical and effective methods for imparting skill in mechanical occupations. The present emergency magnifies the two demands for better methods for the acquisition (a) of *knowledge* and (b) of mechanical *skill*. An important third issue appearing in each of these two problems—the acquisi-

tion of liberal knowledge and the acquisition of technical skill, is the introduction of *ethical idealism* into all teaching whether for knowledge or for skill. It is not the purpose of our study to enter very far into the detail of this question, how to teach ideals, the answer to which has been sought ably by such teachers as Hall, Thorndike, Bagley, Dewey, and McMurry. Ross observes,—"The overwhelming majority of people, bad as well as good, respond to some ideal or other. Chesterton is not far wrong when he says: 'Every man is idealistic; only it so often happens that he has the wrong ideal. Every man is incurably sentimental; but, unfortunately, it is so often a false sentiment.'"(19)

It is said in this connection that we need sorely the development of "industrial intelligence" as well as industrial skill. A broad interpretation of *industrial intelligence* reads into this expression (a) an ethical idealism, as well as (b) information about industries of economic value to accompany (c) skill in the sense of manual dexterity and training, coördination of brain, eye, and hand.

We venture to lay down tentatively the following outline of ten means whereby the ideals of democracy and also industrial intelligence may be developed in our schools. In practical contact with private individuals and with social and civic groups the superintendent and the professional educator simultaneously utilize many channels to move forward ethical idealism. A distinction fundamental is that between the *lay* (legislative) and the *professional* (executive, supervisory) functions in school-administration. The first of these functions belongs to school boards; hence we speak first of this matter of control.

1. **Ultimate, single control.** Systems of public education whether organized into federal, state, municipal, county, or smaller units, should avoid rival boards of control. There should be ultimate, unitary control in order to enforce but one kind of ideals, the ideals of democracy. Our Constitution and

practices provide safeguards to prevent perversion of unitary control to permanent autocracy. Dual or entirely independent systems of elementary education supported by public funds, whether set up by irreconcilable educational factions, by religious denominations, or by partisan politics, are essentially wasteful and promotive of caste and have not proved satisfactory upon trial. Adherence to *single control*, however, does not negate the value of temporary boards, commissions, or other bodies for educational control, organized to establish neglected phases of education in the face of academic opposition, and constituted with representatives of the schools, labor, and capital, and with restricted and defined powers. An example of this emergency type of board, or commission, was the Federal Board for Vocational Education, organized to coöperate vitally with State Boards and with the United States Bureau of Education and other federal bureaus and departments. Both the spirit and the letter of the Smith-Hughes Act demanded considerable coöperation and unity of effort rather than rivalry or dualism; ultimate control inhered in appeal to Congress as well as in the legislatures of the States. If the work of the Federal Board should be entirely absorbed by a national Department of Education, there should still remain a safe-guarding of oneness of aim and administration compatible with democracy.

A good type of unitary state control is one in which the Code and the Statutes of a state authorize: (1) A small, appointive, or elective-at-large Board of Education composed of intelligent laymen; (2) that these laymen appoint an expert educator to discharge executive and professional functions as head of the State Department of Education; (3) that this executive (Commissioner of Education) nominates other trained persons to be executives of various divisions of his Department,—such as Division of Elementary Education, Division of High Schools, Division of Vocational Education, Division of Health, Division of Educational Research, etc. The whole school system of the

state thus may be coördinated for teaching consistent with democracy. Universities and other special institutions are included in the scope of the above plan with boards affiliated with the State Board; (4) Municipal and County Boards advantageously could be modelled in similar but simpler form.

2. **Didactic assertion, simple teaching of truths by word of mouth and by printed page has its place.** Reaction from the Socratic doctrine that "virtue can be taught" need not lead us to utter abandonment of the principle that information, understanding, facts, are conducive to steady action. When one considers the universality of imitation in the human mind, and the power of normal suggestion in modifying conduct of individuals and of groups—he is likely to magnify the utility of oral or written words in the inculcation of effective ideals. The "winged word" is the most powerful of all instruments. The difficulty is that our words meant to convey deepest truths often lack the masterly utterance and timeliness of the great teachers—Jesus, Confucius, Socrates, Plato.

3. **Curriculum changes.** Educational research has uncovered wasteful practices in treadmill repetition and some inconsistent courses of study in our elementary and secondary schools. Encouraging progress is being made toward economies of time and effort, which will give better opportunity for emphasis upon the civic and ethical bearings of every subject in the curriculum.

4. **Expression or practice.** Oral and incessant portrayal of ideals is not enough. There must be expression if the ideals are to be ingrained in life. Opportunities for development of expression inhere in the school, in shop, in play, in social organizations, in participation of pupils in the multiplying activities incident to the war, such as thrift campaigns, gardening, and the Boy Scout movement. The day is past when the teacher of language, or mathematics, or manual training, or science, or history, or civics, or hygiene, may consider safely his subject

as of value in itself and to be taught to receptive or merely absorptive students regardless of any bearings that the subject may have upon active or community life. Every teacher may consciously indoctrinate and make active the principles of democracy as revealed in his subject—be they the subordinate principles of culture, discipline, utility, knowledge, or skill. Only teachers who can do this thing are fully qualified for public education. There are abundant potential avenues in the schools for putting into practice the choicest ideals of equality, fraternity, liberty, fair play, team spirit, manly competition, sympathy, love of our country.

5. **Consciously developed attitudes.** The development of educational psychology has brought forward facts and methods of some general value to educational practice, as witness the psychology of instincts, of habit, of interest, of attention, of formal discipline, of the learning process, etc., the psychology of the elementary and high school subjects, and the tendency toward experimentation, or trial, rather than toward dependence upon debate and oratory in educational advancement. Some new light also has been thrown upon the psychology of prejudices, set convictions, emotional attitudes.(1c) Attitudes may be in large measure the product of controllable factors or situations. It would seem that in the matter of inculcating ideals, and those mental complexes called attitudes, which embody both ideas and emotional factors—opportunity appears for practitioners of applied psychology to tell us more definitely how to develop consciously those desirable prejudices toward the good, which may be utilized in the development of individual character and for the stability of our democratic society.

6. **Emotionalism.** Aims and ideals to live in conduct must be rooted in the impulses, feelings, emotions and sentiments that often motivate life more deeply than perception or than reasoning. Cold-blooded analysis of fact, verbal portrayals of truth immaculate in rhetoric, but somehow totally lacking

the qualities of appeal, are not always sufficient in teaching ethical and national ideas to pupils. Music, poetry, drama, real oratory, personal appeal, the Flag, the Church, each has a vital function not to be neglected and not to be relied upon as exclusively sufficient.

7. **Specific education for patriotism.** The sentiment of patriotism is a refined form of emotion. Abiding patriotism in the individual includes definite ideas developed by the people of the nation as concerns the common good, equality, liberty, and the principles for which our fathers fought. It includes also the affective glow of feeling which combined with the ideas about principles, pioneers, country, constitute the sentiment of patriotism—a subtle sentiment to analyze, but a real, stupendously powerful social energy. The point is, there are definite ideas and facts to be nourished in engendering patriotism, ideas found in the Declaration of Independence, in the Constitution, in the non-sectional history of our country, and in the expression of choice thoughts of our great men. E. g.: thus spoke on July 4, 1918, President Woodrow Wilson at the tomb of Washington:

> The associations by which we are here surrounded are the inspiriting associations of that noble death which is only a glorious consummation. From this green hillside we also ought to be able to see with comprehending eyes the world that lies about us and should conceive anew the purposes that must set men free.
>
> It is significant—significant of their own character and purpose and of the influences they were setting afoot—that Washington and his associates, like the barons at Runnymede, spoke and acted not for a class but for a people. It has been left for us to see to it that it shall be understood that they spoke and acted not for a single people only but for all mankind.
>
> They were thinking not of themselves and of the material interests which centered in the little groups of landholders and merchants and men of affairs with whom they were accustomed to act, in Virginia

and the colonies to the north and south of her, but of a people which wished to be done with classes and special interests and the authority of men whom they had not themselves chosen to rule over them.

They entertained no private purpose, desired no peculiar privilege. They were consciously planning that men of every class should be free and America a place to which men out of every nation might resort who wished to share with them the rights and privileges of free men.(24)

Teachers who nourish in their hearts loyalty to American ideals, and who know enough of history, tradition, and literature to supply the indispensable basis of fact are the ones qualified to instill patriotism, and no others are. Whether the teacher's subject of instruction be German or science, Latin or gymnastics, English or machine work, the building trades, or home economics—the qualifications for loyalty and patriotism are essential in our democracy.

8. **Health.** "While some gifted persons may possess strong wills in spite of weak bodies, for most people physical and moral vigor are connected intimately," remarks Neumann.(18) Samuel Johnson's remark that the sick man is a scoundrel is given some credence by the numerous instances where vice, intemperance, gross indolence, harmful fears, obsessions, fanaticism, and crazed radicalism may be traced to bad health or physical weakness. One of the other functions of public education, in addition to the establishment of standards of individual conduct compatible with democracy and the development of individual capacity to share in social life, is to provide the best conditions for the conservation of physical strength, for the prevention of disease and of accident. New meaning therefore will attach to the administration of all valid health and safety measures in our effort to conduct a public education conducive to the upbuilding of true democracy. In our emphasis upon the spiritual, or upon ethical idealism, we cannot afford to ignore the other, the physical aspect of the human organism, whatever may be

our metaphysical theory of the nature of the mind-body relation.

9. **Attendance, and cure of elimination.** Our public schools will never serve completely all the people (a) until we achieve compulsory and regular attendance during an adequate school year, and (b) until the present evil of premature elimination is overcome. Schools which in upper grades and in the high schools educate only a small, fortunate fraction of the population may be contributing to caste and an aristocratic tendency. That less than a seventh of the pupils who enter the first elementary grade have been graduating at the average American high school is due to factors in the pupil, in society, and in the school, worthy of serious study and determined remedial effort.

10. **Vocational education not mere addition.** Merely to add vocational courses to the existing school as though they were something entirely different from the educational process and intended only for a distinct group of pupils is a wrong conception of public education. The whole fabric of education—elementary, secondary and higher, needs renovation in accord with a vocational end compatible with democracy and universal education. This renovation should be accomplished in a constructive spirit taking care to conserve, not to destroy, the best in existing schools.

The schools of the past half century succeeded marvelously in safeguarding the ideals of democracy. Otherwise, how came during the World War the unanimity of action, the oneness of purpose and of whole-hearted effort of our people working and fighting to preserve the best of civilization and to make the world "safe for democracy"?

Our industrial unpreparedness and inability to furnish trained men quickly for and from those industries demanding skilled labor was revealed during the War as a weak point in the product of our schools. The problem of rectifying our errors in

industrial education and, indeed, of supplying adequate vocational training of many other kinds is emphasized for schoolmen and citizens by the World War. In the meantime, we will continue to conserve and cherish the best in our educational system, which delivered for world service our armies of millions of young men—healthy, clean-minded, efficient, imbued with the ardor and conviction of democracy.

Summary

1. Thoroughgoing discussion of vocational education lower than college grade, especially a discussion including reference to the historical background, the psychology of human nature, and the concrete practices in the field, inevitably encounters controversial along with descriptive matter. We may safely accept the statement that the evolution of human society reveals the necessity of ethical *ideals* along with the increasing *skill* of hand and accumulating *knowledge*. Disaster and horrors have come repeatedly to individuals and to peoples because of neglect of this principle. In democracy it cannot be forgotten.
2. Formal education, in the schools, is the recognized instrument for perpetuating skill, knowledge, and ideals. The five specific reasons why the state, as the incorporated people, must support education, should be familiar to every student and citizen.
3. Education, regarded as process, is the effort to make or to prevent changes in human beings according to some aim and ideal. There are numerous controllable factors in effecting these changes, some within, others without the school. The undertaking is highly complex and challenges the best professional thought and energy when we accept the program of universal education.
4. The common ideals of American democracy are pretty well

established, known or felt. Theorists who bring up alleged difficulties in reconciling the claims of individuals and of groups within the schools are needlessly alarmed. The traditional ideals of the past vigorously advocated for education by eminent individuals or by collective groups great or small, can be reconciled by the application of the principle of relativity or balancing of aims. The individualism bringing voluntary personal isolation—in essence selfishness or fear, is as incompatible with American democracy as a radical socialism and collectivism which knows not the individual. In general, the ideals of American democracy have thoroughly dominated our public schools, which have had enormous growth in spite of early obstacles. In articulating the schools with industry, men in industry as well as pupils and teachers in the schools need a broad vision of the significance of education and of the dignity of human labor rightly directed.

5. It is futile dogmatism to lay down unchangeable rules of method whereby democracy may be safeguarded always in the schools. The undertaking is one that demands peculiar vigilance, intelligence, loyalty. The new emphasis upon the vocational aspects of education, however, necessitates effort to formulate tentatively the important means to supply the needed safeguard. We have enumerated ten in number, as suggested by these topics: (1) Securing an ultimate single not dual control; (2) didactic assertion of ideals; (3) curriculum changes; (4) emphasis upon practicing ideals; (5) development of fixed attitudes; (6) regulated emotionalism; (7) specific education in patriotic facts; (8) conservation of health as the basis of sane thought; (9) cure of premature elimination of pupils from school; (10) regarding vocational education as more than a mere addition and recognizing the need of educational reorganization.

We have been speaking of the benefits of *general* public education as a factor in safeguarding democracy, and as the engine to build ethical ideals as well as knowledge and skill. We are concerned definitely in this book only with one important aspect of public education—the *vocational.* In the next chapter, therefore, we must examine the meaning of the phrase "vocational education."

PROBLEMS

1. Is there any particular kind of existing school best suited to inculcate democratic ideals in the minds of the people? Describe it.
2. Formulate arguments for the public support of different phases of education,—i. e., (a) physical, (b) moral, (c) intellectual, (d) industrial.
3. Seek concrete cases to show the distinctions between knowledge and skill.
4. Explain the meanings of the concepts, *altruism, humanism, socialism, individualism, anarchy, egotism, obsession.*
5. Show how Prussian ideals modified the course of the World War.
6. To what extent are opportunities for universal education offered in your state or city, or county?
7. Tabulate reasons alleged by some persons as opposing the public schools. Consider each allegation.
8. In the technique of teaching ideals, what other means are promising in addition to the ten enumerated?
9. What is your ultimate, highest general aim in life? State various immediate or contributory aims, or ideals.
10. In what ways has the World War made plain certain excellencies and defects of our public schools? Apply the question to your local school system.
11. Before reading the following chapter, endeavor to formulate different interpretations of the phrase "vocational education."

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CHAPTER II

THE MEANINGS OF VOCATIONAL EDUCATION

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Summary. Problems. Selected References.

Contemporary Demands and Interpretations

What is vocational education? The phases of education concerned chiefly with the practical applications of knowledge and skill in vocations (e. g., the occupations of the home; of the farmer; of the mechanic and factory worker; of the railroad, or nautical, or automobile man; of the miner; of the tradesman, merchant, clerk, or banker; of the barber, cook, waiter, janitor; of the engineer, doctor, minister, lawyer, journalist, artist, etc.)

these are types of vocational education. Stripping the term of restricted meanings, we understand vocational education to be a phase of education emphasizing specific preparation for and participation in occupations of social value. If one should claim that the training of thieves, adulterators, and social parasites is vocational education, then the criterion of "social value" prevents the implication. Further on we shall see that one service of educational research is to disclose conditions that will estop the schools from training youth for blind-alley jobs, or aiding in schemes for the exploitation of boys and girls.

Monroe(15) emphasizes the fact that in a sense all education is vocational because it aims to prepare for the more efficient and satisfactory performance of the activities of life. Liberal education in a sense is vocational, for it aims to prepare for the life of the gentleman, the statesman, the man of public affairs, or the ecclesiastic. It aimed to produce the philosopher of Greece, and the orator of Rome. Elementary education in its early historic stages was vocational, since it was preparatory to some higher form of education. In the ordinary usage of the words, vocational education has become differentiated from the more general aspects of education. It includes training in the practical application of knowledge and for distinct groups of workers, and is obtained both within and also outside of the schoolhouse. It is usually a difficult undertaking to preserve the differentiation of labor, methods, and equipment which make for occupational proficiency, without neglecting the development of the prospective worker into a citizen and man. The difficulty of access to the other, i. e., liberal education, once a youth is committed to any specialized vocational training, was one deplorable element in the Prussian schools. It aided the stratification of society into autocratic, cruel masters on the one hand, and efficient but automatically subservient people on the other.

Demands for the practical. The recent years of the world have revealed unprecedented economic conditions, and these raise the question, what has the education predominant in the public school to do, what part does it play, in the status of those (1) persons who are employed unhappily, as misfits; (2) persons who are employed viciously; (3) persons who are temporarily unemployed; (4) persons who are unemployable; (5) persons who are happily and usefully employed?

Some critics have jumped to the conclusion that the schools having under control the majority of the population during early years of plasticity, are therefore chiefly responsible for unfavorable social and economic conditions. Reckless criticism forgets the principle set forth in an ancient Hindoo saying, that a man obtains a fourth of his education from nurture, a fourth from growth, a fourth from his companions, and a fourth from the school. The responsibility of the school in securing the health of the people, economic productivity, the transmission of knowledge and of skill, the establishment of standards of conduct—is supreme, but a sound educational theory and practice can not ignore other factors in the educative process. We refer to the home, the playground, the street, the theater, press, church, nutrition and food, climate, and occupation.

Dissatisfaction with existing schools has also been fed by journalism. For example, here is quoted a widely-disseminated article by an able popular writer, Dr. Frank Crane, in *McClure's*, during 1917.

THE UNTRAINED

I have just graduated from the High School. I am supposed to be educated. The City has provided me for some years with skilled teachers and expensive apparatus of all kinds. I will tell you a few things I don't know.

I know by heart several slices of Goethe and Schiller; but I don't know how to ask in German for a piece of bread and butter.

I know some irregular French verbs; but if I were lost in the streets of Paris I couldn't ask my way home.

I can say *amo, amas, amat,* also *en to oikio ton anthropon horo,* but I cannot keep the ledger at my father's store nor send out his monthly statements.

I am half-back on our team and know the quirks of passing the ball; but I don't know how to build a woodshed or shingle a roof.

I can extract the square root of 9,273,642; but I don't know how to extract the milk from our cow.

I know how to parse a sentence from Macaulay's Essays; but I don't know how to light a match in the wind or how to chop down a tree.

I have studied Political Economy until my head is full of raw theories and long words; but I don't know the name of the alderman from our ward nor the congressman from our district.

I can prove that the square of the hypotenuse is equal to the sum of the squares of the base and perpendicular; but I don't know how to hang wall-paper, put in a pane of glass or paint a buggy.

I have taken fifty lessons in Chemistry; but I don't know enough to keep alcohol out of my system, I know nothing of food values and gorge myself on what pleases my palate.

I received eighty-five per cent in English Literature; but I couldn't get fifteen dollars a week writing news for a newspaper, I can't write a readable letter, and my average conversation is about on a level with the sporting page.

I don't know who our mayor is and nothing of our city government; but I know the names and have the pictures of all the prominent actresses, prize-fighters and base-ball stars.

I can order drinks at the Country Club; but I can't churn a good mess of butter, I don't know when to plant beans, I have no idea what kind of soil is good for corn, I can't tell a slippery elm from a hickory tree, I don't know the names of the grasses, mosses, ferns, and flowers in the woods I tramp over, I can't fry fish nor make coffee nor biscuit, and I don't know the names of the stars I see every night in the sky.

Nobody has made me understand how to control my appetites, nor the laws and dangers of sex feeling, nor the need of discipline, nor the art of engaging conversation, nor the true nature of happiness.

I was educated according to the ancient formulas for producing a scholar and a gentleman, and I find I have to work for a living. I have no taste nor love for hard work, no habits of saving, no disposition to resist temptation, and no skill in doing anything the world is willing to pay for. I am wholly untrained for efficiency; and before I make good I will have to undo most that has been done to me in school.

Different provisions needed. The investigations and reports of the National Society for the Study of Education are evidence that encouraging progress is being made throughout the country in the reorganization and betterment of elementary and secondary education. Surveys of higher educational institutions, and of city and state systems, also indicate interest and progress. The passage of the Smith-Hughes Act for the promotion of vocational education below college grade and its acceptance by the States, were signs of intelligent recognition of the particular claims of vocational education.

One claim of vocational education, as distinguished from practical arts education and from general and liberal education, is that different provisions are necessary in order to make it an actual preparation for and participation in, occupations of social value. Its activities so closely resemble, or are so nearly identical with the activities of industry, that the hours, methods, equipment, and control of vocational education must be in some respects different from those of the average, old-time elementary or high school giving instruction in the conventional, bookish subjects, and by traditional devices. Especially are demanded vocational instructors trained both in books, and also in industrial occupations through actual contact, and in the elements of educational science and art as well. This is a valid claim to be admitted by the school man. However, the admission does not disregard the necessity of ultimate unitary control of all public education as a sound policy of educational organization and statesmanship.

Divorce impracticable. It has yet to be demonstrated anywhere in the world that, in the education of an individual specialized vocational education can be divorced safely and permanently from general and liberal education. There are hours, weeks, semesters, years during which one's attention must be exclusively centered upon the acquisition of specific skill and practical knowledge—but during the active years of every human being under democracy, there must be provided ready access to the choicest fruits of general and of liberal education. Several considerations strengthen this conviction.

First, in our eagerness to supply the special skill and knowledge of operation, process, or trade, needed for individual promotion and social economy, we are prone to overlook the fact that every active person has along with his dominant occupation, life-work, or vocation, many other occupations. Says Dewey:(5) "In the first place each individual has of necessity a variety of callings, in each of which he should be intelligently effective; and in the second place, any one occupation loses its meaning and becomes a routine keeping busy at something in the degree in which it is isolated from other interests. No one is just an artist and nothing else, and in so far as one approximates that condition, he is so much the less developed human being; he is a kind of monstrosity. He must at some period of his life be a member of a family; he must have friends and companions; he must either support himself or be supported by others, and thus he has a business career. He is a member of some organized political unit, and so on. We naturally *name* his vocation from that one of the callings which distinguishes him, rather than from those which he has in common with all others. But we shall not allow ourselves to be so subject to words as to ignore and virtually deny his other callings when it comes to a consideration of the vocational phases of education."

In the second place, utter specialization of education, divorced from liberal education, would be impracticable because of the

existing multiplicity of trades, occupations, operations, and processes. A mere glance at the last government census of thousands of occupations (Census 1910, volume IV), reminds us of the absurdity of erecting a distinctive, isolated course of study for each of the ever changing, endlessly varied forms of human labor.(17)

Thirdly, there are some phases of general and of liberal education of common value to most occupations. Liberal education that is not pseudo in content, method, or result, should promote in the individual such abilities and traits as these: health; knowledge and skill in the elements of reading, writing, arithmetic, personal and civic hygiene, history, and geography; some factual acquaintance with scientific knowledge, and an appreciation of scientific method; habits of enjoyment of the true, beautiful, and good, in science, nature, art, literature, and people; emotional attitudes and conscious aims, that will sensibly subordinate and regulate the various motives and purposes of individual life to ultimate ideals of democracy and brotherhood.

Unfortunately, declares Dewey, liberal culture by tradition has been linked to notions of leisure, purely contemplative knowledge, and a spiritual activity not involving the active use of bodily organs. Culture has tended to be associated with a private refinement, a cultivation of certain attitudes of consciousness separate from either social service or direction. Armchair reformers have assumed a gap between labor and leisure, practice and theory, body and mind, knowing and doing.

Six contemporary interpretations. Democracy flourishes upon intelligent discussion. Extreme use of the principle has occasionally been exhibited in talk about the meanings of the adjectives *vocational*, *cultural*, *liberal*, *general*, *manual*, *specialized*, etc. The reader may be interested in reviewing some typical contemporary interpretations of vocational and of liberal education. However, the supposed antithesis between the

liberal and the vocational is no new discovery, the elements of present day debate being found in the discussions of Aristotle, Socrates, and Plato. Here follow six examples of contemporary interpretations (A, B, C, D, E, F) of the expression "vocational education."

A. *Vocational education a fad.* Resentful of efforts at progressive change, or educational readjustment, a minority carelessly labels all aspects of the vocational movement as "fads," or "sops to soothe labor and capital."

B. *The narrowly practical.* Vocational education is conceived as merely a special variety of *manual training*, or of *agricultural*, or *commercial*, or *trade training*, etc.

C. *Production vs. consumption.* Vocational education is conceived as essentially education for production, contrasted with liberal education conceived as education for consumption. David Snedden, an advocate of this distinction, thus explains:

> Liberal education may be defined in various ways, but to the writer, the most serviceable definition is to be made by contrasting liberal with vocational education in the same way that production and consumption (or utilization) are contrasted in social and economic life. Vocational education is designed to make of a person an efficient producer; liberal education may be designed to make of him an effective consumer or user. The liberally educated man utilizes the products and services of many producers; but because of his education he uses them well, both in the individual and in the social sense. Through the effective utilization of such products and services he raises the plane of his own life; and, none the less, he elevates the sources of the goods and labor which he employs. He uses good literature, rather than bad; he exacts from other producers expert rather than untrained and fraudulent service; in his contacts he puts a premium upon good taste, refinement, and right morality; and in the sphere of more material consumption, his demands lead to improvement both in the quality of the goods he obtains and in the social conditions surrounding their production. His utilization elevates himself and also the world because of his appreciation, his insight, his sympathy.(22)

D. *Specialized efficiency vs. adaptability.* Vocational education is for specialized efficiency, and liberal education is for providing adaptability to changing conditions. This viewpoint of W. C. Bagley, offered before the National Education Association during 1914 in opposition to the views of David Snedden, is supported by the former with these considerations:

(1) Production and consumption are merely convenient abstractions of the economist for the promotion of clear thinking.

(2) No sharp distinction can be drawn between a man as producer and consumer. Certain fundamental activities, such as citizenship and home relations,—can not be classified as predominately productive or consumptive.

(3) The distinction between production and consumption "perpetuates an older prejudice under which the so-called liberal education already suffers too much. I refer to the notion that the liberal education is in some way opposed to the practical things of life."(17)

E. *Vocational education is for utility.* *Utility*, a word used in more than one sense, has been applied often to denote the end of vocational education. Sometimes the term is meant to imply something not as good as *culture*, *knowledge*, etc., or at least merely the bread-and-butter end.

Leake, a Canadian writer, reminds us that our educational systems should prepare us to lead a worthy life, but that no one can live a worthy life who is unable to make a living. . . . In the present economic condition of society the bread-and-butter problem is the great question of life for the large majority, and is one of the most logical and effective arguments that can be made. It is the manifest duty of the State, if it be truly democratic, and if it be organized on the principle of the greatest good to the greatest number, to make the chief work of the elementary schools that of training the great bread-winner, the hand, assuming of course the self-evident proposition that the hand cannot be effectively trained without at the same time training the head.(12)

E. L. Thorndike, in evaluating educational aims and speaking to the same point, expresses these views: "It is true that the money-price which

an act or quality of mind or body brings in the world is not a right measure of its real value to the world. For instance, the discovery of truth and the bearing of worthy children, the two things most essential to the world's welfare, are, as a rule, not paid for at all. A writer of advertisements is paid more than a poet; and a crafty trader in soap more than the best physician. But it is also true that in many cases the money-price paid is a symptom and a partial measure of real worth. The graduate who has learned nothing for which the world will pay may in a few rare cases be a great scientist or poet or social reformer, but he will far more often be a mere incompetent. . . .

"A contrast is also often drawn between the 'bread-and-butter' studies and those which give culture and refinement. This is unjust to both sides. Culture and refinement are not good because they are the marks of an idler—of one who does not share in the world's productive labor. They have a far different warrant from that. Much less are the bread and butter studies bad because they are for the great majority, the toilers, those whose talents and opportunities do not suffice to win them an easy or bountiful living. It is just because the bread-and-butter studies make the struggle for bare existence less intense and exacting and dull that their value is real and great. It is, moreover, precisely by their aid that those who would otherwise be unskilled slaves to daily necessity are given some chance for culture and refinement.

"Another unwise contrast is that between certain forms of education commonly called utilitarian, such as instruction in agriculture, in trades and industries, or in the technical and scientific professions, on the one hand, and certain forms of education commonly called non-utilitarian or cultural, such as the study of the classical and modern languages in high school, or the courses in art, music and manners in girls' boarding-schools. To *call* a thing utilitarian or non-utilitarian does not make it so. The study of agriculture may demand and foster as intellectual interests as does the study of poetry. That the individual earns his living by it may be a minor matter. The scientific professions need be no more subdued to dollars and cents than the profession of literary man or painter. The languages of the high school are very often out-and-out utilitarian, namely, in cases where the method of earning a livelihood—for instance, teaching—demands a high-school graduation. The art and music and manners of the finishing school

are intended precisely to get the girl such a livelihood as her social class requires by getting her a husband."(25)

F. *Practical education compatible with ethical idealism.* It is possible to combine the acquisition of skills and of knowledge and of ethical idealism. This is the fundamental assumption of this book. This combination, it appears both from the standpoint of sound psychology and also of history, is indispensable for democracy. The fear that practical training may interfere with the idealistic training of our boys, is thus combated by Professor Moore:

There can be no question that this movement is on. It has two forms, one the movement for definite vocational or trade or occupational training, the other a much larger movement to make education of all sorts definitely and specifically preparatory for the life that the student will lead by making that life the basis of his education throughout. . . . My own difficulty is not at all due to concern lest the young may lack an idealistic training if they are instructed in practical studies and given what is called a vocational education. My difficulty is that I can not comprehend how any other kind of education ever came to be given. How did it happen that anything but that which prepares men for their work ever came to be regarded as education? Must not all education be *vocational?* If we follow Aristotle's advice to *study things in their origin* we get great illumination upon this problem. Paleolithic man, if he taught his child anything, must have taught him to do the things which he had found indispensable, to chip stone implements and to hunt with their aid. Whatever education there was in that early time was clearly vocational. And vocational it remained at *Sparta*, and at *Athens* too, for reading and music and gymnastics were the means to that democratic citizenship which the ability to read Solon's laws, to understand the Homeric morality and to defend the state against the Persians made possible. When the Sophists introduced higher education into Greece they came offering to teach the *art of life* or how to succeed in public and private affairs. One of them, Gorgias, believed and taught that but one thing was needful. The

person who wanted to be a physician he urged to learn how to make speeches rather than to study medicine, and the man who wanted to become a general he said should study speech-making rather than military tactics. But Socrates corrected this error and spent his life in telling the Athenians that they must learn civic and manly virtue in just the same way that they learned to make shoes or pilot ships. Plato in a famous passage tells us that his notion of education was:

"According to my view, any one who would be good at anything must practice that thing from his youth upwards, both in sport and earnest in its several branches; for example, he who is to be a good builder, should play at building children's houses; he who is to be a good husbandman, at tilling the ground and those who have the care of their education should provide them when young with mimic tools. They should learn beforehand the knowledge which they will afterwards require for their art. For example, the future carpenter should learn to measure or apply the line in play, and the future warrior should learn riding, or some other exercise, for amusement, and the teacher should endeavor to direct the children's inclinations and pleasures by the help of amusements to their final aim in life. The most important part of education is right training in the nursery. The soul of the child in his play should be guided to the love of that sort of excellence in which when he grows up to manhood he will have to be perfected. . . ."

No better statement of what education is has ever been made than this. It is learning beforehand the knowledge which one will require for his art. The teachers should direct the children's inclinations and interests to their final aim in life, and of all these aims that of being a good citizen and a good man is the greatest. That, too, according to Plato, is an art in which one is to gain skill in distinguishing good from evil, true from false, noble from ignoble by what he does, just as the carpenter learns his trade or the farmer his. Cleanthes tells us that Socrates " cursed as impious him who first separated the just from the useful." That knowledge is virtue was the one doctrine that he taught. To him all knowledge was practical and as I read him all knowledge was practical to Plato also. It was Aristotle who introduced confusion, first, by distinguishing a liberal education from an education fit for

slaves, a distinction which the world mistakenly tries to maintain after slavery has gone out of existence, and, secondly, by separating theoretical knowledge from practical knowledge—theoretical knowledge, as he put it, being knowing just for the sake of knowing, knowing wholly unmixed with volition, and practical knowledge knowing for the sake of doing. Is there any such thing as knowing unmixed with volition? . . .

It is what we do that teaches us. It is easy to get on with one's fellows in the school, but in the shop team work and the ignominy of shirking are realities. Our little undertakings, if they be real, teach us the importance of the virtues. Our great undertakings in which we stand together facing defeat and death teach us perhaps for the first time in our lives that all that we can do is of but slight avail, that unless right is on our side and God fight for us our struggle is in vain. It is purpose, laying hold of life in race-old human ways rather than indifferent and aimless seeings and hearings, that we must depend upon to make men really conscious of the facts and significance of religion and morals. For a purposeful wrestling with conditions has a sobering poignancy about it as superior to a mere verbal taking account of them as first-hand evidence is superior to hearsay evidence. It is in sweeping rooms, in herding sheep, in plowing fields, in driving engines, in tending machines, in fighting battles, that one must learn to be a child of God, or his religion will be as little a workaday affair as his Sunday clothes are.(16)

Educational Ideals and Distinctions

Balancing aims. Some of the confusion and bitterness inherent in the efforts to define and administer various aspects of education, might be lessened by a fair appraisal of the various historic aims or ideals of education, each in its just social relation. Various two-fold distinctions have been erected, as between secondary and primary, immediate and remote, subordinate and dominant, proximate and ultimate aims and ideals. There are in education intense devotees respectively of *culture*, *knowledge*, *skill*, *development*, *utility*, *perfection*, *service*, *discipline*, and *happiness*. Socrates, Plato, Aristotle, Quintilian, Simeon

Stylites, Comenius, Vittorino, Loyola, Rousseau, Pestalozzi, Herbart, Locke,—each educational pioneer has admirers and imitators.

In balancing ideals and aims in education there is, first, to be made a study of the community and of existing schools. Secondly, there arises continuously the question, what subordinate, or proximate aims are justly demanded by the present hour, week or semester, as claims upon the individual, the teacher, the class, the school, or the community? Thirdly, the dominant, or ultimate, the all-inclusive motive or ideal is superior to any immediate objective of special training, or of occupation indicated by social and individual needs. The definition and establishment of such a dominant motive or ideal is a problem of practical ethics, in behalf of both the individual and also the state. There is some agreement that its ingredients will include: (1) *Brotherhood*—desire, ability, and effort, to add something to the sum total of human welfare. (2) *Morality*—conformity to common social habits of thought and action that are approved by the sifted experience of the race, by enlightened conscience, and that make for the just use of knowledge, skill, and resources. (3) *Individual independence*—ability to earn a living, freedom from parasitism in thinking and doing. (4) *Health*—physical and mental well-being,—an indispensable factor for individuals and posterity.

Divisions of vocational education. The visible forms exhibited by the movement for vocational education are numerous and a complicated terminology has come into being within our own country. A full understanding of the origin of certain of our vocational educational institutions, and of the present nomenclature, would carry us to a study of European school systems and to the history of education in general.

A practical system of nomenclature for vocational schools can have as its general basis the accepted classification of all occupations. The United States Census groups all of the occu-

pations of 38,167,336 gainful workers under these nine occupational divisions: (17)

1. Agriculture, forestry, and animal husbandry.
2. Extraction of minerals.
3. Manufacturing and mechanical.
4. Transportation.
5. Trade.
6. Public service.
7. Professional service.
8. Domestic and personal service.
9. Clerical.

We find corresponding to these divisions certain phases of vocational education: such as, agricultural education, industrial education, commercial education, homemaking education, and professional education. Other major divisions of education, corresponding to *vocational education*, are *cultural education*, *physical education*, etc., each being a type of education differentiated by a special emphasis.

Practical arts courses distinct. Similar to the distinctions drawn between general and vocational education, there is a difference between practical arts education and vocational education. It was the opinion of a Committee of the National Education Association that vocational education is to be distinguished from various forms of so-called practical education, which may resemble, in their processes, vocational education, but which do not result in definite vocational results. For example:

> Various forms of nonvocational education here comprised under the term "practical arts," include manual training, sloyd, manual arts, arts and crafts when pursued as part of general education, household arts, simple gardening and agricultural education, many phases of commercial education, etc.
>
> The various forms of practical arts education as now given in schools are not properly vocational, although sometimes mistaken for vo-

cational education, because they do not result, except by chance, in recognized forms of vocational efficiency, nor are they assumed to be given to persons who have defined vocational aims.

Various forms of practical arts education have a valuable place in general or liberal education, as a means of enlarging general intelligence, developing sound appreciation of economic products, and in laying the foundations for vocational choice.

Practical arts education is sometimes termed 'pre-vocational education,' because of the belief that a suitable program of practical arts training will make important contributions toward the individual's ability to choose a vocation wisely. Its value to this end depends largely upon the degree to which the individual has already developed vocational interest and a desire to choose a suitable vocation.(26a)

Standardizing Terms

This Committee on Vocational Education of the National Education Association agreed upon certain definitions and types in the attempt to standardize terms. The Committee complained that "No two speakers on a given subject (in education) will be found to use terms derived from the popular language in exactly the same sense. Great confusion and waste of effort thus result." An abstract of sixteen definitions and analyses of important terms offered tentatively by the Committee follows:

DEFINITION AND TYPES OF VOCATIONAL EDUCATION

(Abstracted from Report of Committee on Vocational Education, N. E. A., U. S. Education Bulletin 21, pp. 33, 36, and 42–49.)

1. (Definition.) Vocational education is any form of education, whether given in a school or elsewhere, the purpose of which is to fit an individual to pursue effectively a recognized profitable employment, whether pursued for wages or otherwise.

2. Professional education includes those forms of vocational education the direct purpose of each of which is to prepare individuals for the successful pursuit of a recognized profession.

3. Vocational commercial education includes those forms of vocational education the direct purpose of each of which is to fit for some recognized commercial calling.

4. Commercial education, or preferably "commercial arts education" includes those studies derived from, or based upon, the commercial pursuits which are designed to give liberal or general education and to contribute to vocational guidance and vocational ideals in the field of the commercial occupations.

5. Vocational agricultural education includes those forms of vocational education the direct purpose of each of which is to prepare students for some one of the agricultural occupations.

6. Agricultural arts education includes those forms of training and study based upon agricultural pursuits and designed to enhance general intelligence, to promote appreciation of agriculture as a form of economic activity, to show wherein various sciences have practical application to human affairs, and to give vocational guidance and to inspire vocational ideals as these relate to the field of agriculture. Agricultural arts education, therefore, constitutes an important division of liberal education, both in the elementary and the secondary field.

7. Vocational industrial education includes those forms of vocational education the direct purpose of each of which is to fit the individual for some industrial pursuit or trade.

8. Industrial arts education includes those forms of training and study based upon industrial pursuits and designed to enhance general intelligence and give vocational guidance in the field of industrial occupations.

9. Vocational homemaking education includes those forms of vocational education the direct object of which is to fit for homemaking as practiced by the wife and mother in the home and also for some specialized forms as practiced by household employees, housekeepers, or other wage-earning assistants to the homemaker.

10. Household arts education includes all those forms of instruction and training based upon the occupations of the home or household and which are designed to promote higher standards of appreciation and utilization in the field of the activities associated with homemaking, to promote right conceptions of the social importance of the home as a

nursery of childhood and a haven for the wage earners of the family, and to show wherein the various arts and sciences have practical application in domestic life. Hence, household arts education can be made a large factor in the liberal education of womanhood.

11. Nautical education is the term used to designate those forms of vocational education, the controlling purpose of each of which is to train youths for such occupations as those of the fisherman, the sailor, the ship captain, and the like. These forms of training have not yet been clearly differentiated in the educational practice of America. A few special nautical schools of a technical character exist, and in the United States naval service facilities for training seamen are provided.

12. Day Vocational Schools, in which the pupils attend school the greater part of the working day for at least five days each week. In these schools are taught both the actual operations and the theory underlying these operations.

13. Evening Vocational Schools, in which, as the name implies, the instruction in the school is given in the evening. It may be given in the same operation or in some operation connected with the occupation in which the pupil is employed in the daytime, but in which he wishes further instruction to increase his efficiency. On the other hand, it may be in some occupation which the student wishes to enter, which differs materially from his regular daily work.

14. Continuation Schools, which, as generally carried on in this country, are schools in which the pupil receives some form of day school instruction at the same time that he is employed in the shop. Like the evening schools, the work in these schools may be preparatory or extension. In addition, it is possible in these schools to offer work for general improvement or culture.

15. Prevocational education includes any form of education designed to enable a youth to discover for which one of several possible vocations he is best fitted by natural ability and disposition, the program of instruction and practice for this purpose being based mainly upon actual participation on the part of the learner in a variety of typical practical experiences derived from the occupations involved.

16. Vocational guidance includes all systematic efforts, under private or public control, and excluding the traditional activities of

the home, the conscious and chief purpose of which is to secure the most economical and effective adjustment of young people to the economic employments which they can most advantageously follow.(26a)

Characteristics of German Schools

Dangers in imitation. The history of education reveals many lessons concerning mistakes of educational pioneers, and also records established principles of eternal worth. It has always been an error, however, to transplant to modern soil the unmodified theory and practise of other generations and of other lands. Even the methods of the Master-Teachers, Jesus, Socrates, Pestalozzi, Vittorino, must be adapted and adjusted for modern use. Similarly, the schools excellent in one country and nation, need modification and adjustment when transplanted to another people's land. There have been and are dangers in imitating any foreign school system. Especially before the war the industrial schools of Germany were lauded. We thought then more highly than we do now of the product of these schools,—viz., a certain industrial and military efficiency.

Volksschule, Gymnasium, Realschule. During and since the World War scrutiny of educators has been directed particularly toward the results of the German elementary and secondary schools. It is now universally conceded that these schools, although as a whole efficient in the sense of realizing the immediate aims sought, have been instrumental in the undoing of the German people and nation. These pages are not the place for a review of this whole question, but we may profitably single out certain relevant facts. The German schools at the beginning of the War were far more varied than the casual student of German affairs realizes. The Prussian system was similar to, but by no means identical with, the school systems of the twenty-five other States of the German Empire. As a whole the schools of the Empire were not centralized as in France.

Nevertheless, in no other country than Germany have the schools been so deeply under the influence of certain philosophic thinkers and in general accord with the plans and ideals of the governing classes. There were many special types of educational institutions throughout Germany, but the important kinds were the elementary school (Volksschule), the secondary schools (Gymnasium and Realschule), and the universities.

Privileged groups. The overwhelming majority of the German people never entered the secondary school,—i. e., the Progymnasium, the Realgymnasium, the Gymnasium (three types of schools in which mathematics, and Latin, or Greek, or both were required subjects). Graduation from one of these, especially from the Gymnasium, brought definite social, business, and political privileges which fostered caste and autocratic rule. The Realschule, and the Oberrealschule substituted modern languages for the ancient, were a more modern development than the Gymnasium—but also predominantly were schools for the privileged classes. There was no definite, convenient means of access to the secondary schools (Gymnasien and Realschulen) from the elementary schools of the people, i. e., the Volksschulen.

Predestination. A transference of a pupil from the public elementary to the secondary and higher school system of Germany was possible as a rule only at one point, namely after the third or fourth school year when the boy was about ten or eleven years of age. No German State had an "educational ladder" leading from kindergarten to university such as exists in the United States.

Fortbildungschule. From the Volksschulen the young pupil as a rule went to work at an early age in an occupation selected for him by his parents. In productive industry at fourteen years of age, rather than in a secondary school, the children of the masses were compelled to attend "continuation schools" (Fortbildungschulen) in the evening and on Sundays, in order to

increase their skill and knowledge in the processes of their daily occupation. Few have denied the resulting technical skill of the German workman.

Vorschule and Einheitschule. The Vorschule was an elementary, special fee-paying school which prepares pupils from six to nine years of age for entrance into a secondary school (Gymnasium). Progressive educators in Germany for thirty years have advocated the *Einheitschule*, a free school to be extended for all children between six and twelve years of age, and to be followed by educational opportunities adapted to the various abilities of pupils.

Threefold errors. The most fatal errors in the German schools appear to have been threefold: First, there was the permanent divorcement of the young pupil when leaving the Volksschule from equal access to general and liberal education open to the privileged few in the Gymnasien and Realschulen. Secondly, there was the practical isolation of the pupils of these secondary schools into a privileged caste remote in feeling and activity from their fellows in Volksschule and in industry. Thus Prussian autocracy inculcated its ideals, produced skill coupled with a certain automatism or docility in the masses of the people. Thirdly, there was utterly inadequate provision for the education of women. When one considers that shortly before the World War only about five per cent of the enrollment in the German universities were women, this fact is strongly in evidence.

Fallacies felt. It is significant that about the year 1911 Paul Ziertmann, a German *Oberlehrer in Steglitz Oberrealschule, Berlin* wrote as follows after reviewing the German system:

> It is a pretty generally accepted opinion that the German higher school system, as at present organized, cannot last any length of time; but how it is to be reformed is a problem. But those concerned in it are convinced that reform will not be brought about by a revolution, but by gradual, even slow, but unceasing development.(8)

A review by I. L. Kandel of the Carnegie Foundation of various announcements emanating from Germany during the years 1916–1918, presents an elaborate program of educational reform issued by the Kultus-Minister Hänisch during 1918(26b). The educational world awaits with interest the subsequent developments of this or other attempts to modify German education radically. The actual changes doubtless will remain obscure to us until sources of direct information are open to the world.

No autocracy in America. Any system that develops privilege, caste, autocracy, can not be long tolerated in America. All children of ability from our elementary schools must have ready access and even strong incentives to go through high school and to college. Universal education embodies training for efficiency coupled with the ideals of democracy.

Curricula not static. Equality of opportunity does not imply uniformity in curricula or in schools for all pupils. Two facts or principles demand incessant readjustment of all plans of education and all curricula. The curriculum makers of to-day who seek a perfected product that will remain static and standardized are following a jack-o-lantern. The "perfect" curriculum of to-day before many years will be like the Trivium and Quadrivium of yesterday.

The two facts are: (1) human beings exhibit individual differences in capacity, abilities, and interests; (2) individuals in a large population inevitably fall into groupings—natural, social, economic. Whether we are adjusting vocational curricula to the needs of individuals, or to the needs of groups, or are making propaganda for better laws concerning public education, these two facts can not be ignored. In the next chapter we shall pause to elaborate the two principles as being fundamental in educational readjustment.

Summary. In review of some of the important principles stated in this chapter we may emphasize these nine points:

1. Vocational education is a phase of education wherein emphasis is laid upon preparation for and participation in occupations of social value. Its means are found both within and outside of the schoolhouse.

2. Demands for the practical in education arise from (a) changed economic conditions, (b) defects in existing schools, (c) sensational journalism.

3. There is a difference between temporarily isolating students in vocational courses for purposes of practical administration within a school system, and permanently isolating the individual throughout life from contact with vocational, or general, or liberal courses. Special provisions are needed for vocational education (apart from intensive work in general, practical arts, or liberal education), as to teachers, methods, courses, equipment. But efforts utterly to predestine pupils to exclusive pursuit of vocational, or general, or liberal education, fail. The reasons are: (a) Each person perforce follows many callings; (b) occupations are too numerous and ephemeral to make practicable, or necessary, exactly corresponding courses in specialized, vocational education in every instance; (c) phases of general and liberal education are valuable in all occupations, especially those phases having to do with health and idealism. Unfortunately both *vocational* and also *liberal* education have become associated with narrow or ambiguous meanings.

4. Contemporary interpretations of the meaning, value, and relations of vocational education are varied. Some of these doubtless are based upon misunderstandings about words, or refer merely to certain concrete instances. Fad, the narrowly practical, education for production, for specialized efficiency, for utility, useful education compatible with idealism—are expressions symbolizing various interpretations, of which the last is sound.

5. A clue to the puzzle of conflict of educational ideals, is

found in the principle of balancing aims to accord with individual and social needs—the immediate and proximate aim acceptable, but always to be subordinated to a regulative, altruistic, and ultimate principle or ideal.

6. Strictly vocational courses are distinct from "practical arts courses," the immediate aims of which may be general or vague.

7. Classifications of definitions and principles are afforded in the statements of the Committee Report of the National Education Association.

8. The pre-war influence of German educators such as Kerschensteiner, and the reputed peculiar efficiency of industrial education in Germany, doubtless influenced many American thinkers to advocate before the World War the German system for America. It is now believed that the fallacious philosophy underlying the German elementary, secondary, and university education was a powerful element in producing the World War. It is certain that no ready-made educational system can with safety be transplanted. Progressive leaders in Germany are advocating radical changes in education, and the world during future years will await the results.

9. All valid educational programs and curricula are fluid, not static. There is incessant adjustment of the schools to the needs of the individual and of society.

Problems

1. Trace the historical development of systems of vocational education for one or more of the following callings: minister, lawyer, doctor, engineer, teacher.
2. Also, of these: carpenter, machinist, cooper, operative engineer, mason, seamstress, tailor, stenographer, printer.
3. Outline woman's share in the vocational activity of some primitive people, e. g.: Africans, Australasians, Eskimos, Indians.
4. Show to what extent the courses (in addition to reading,

writing, and arithmetic)in the elementary schools with which you are familiar function in certain definite callings.

5. Is there demand and reward in your community for many persons not exceptionally proficient in any one calling, but of "all-round ability" with tools, clerical work, etc. Numbers employed, constancy of employment, wages?
6. How do (a) arithmetic, (b) grammar, (c) algebra, (d) geometry, (e) Latin, (f) rhetoric, (g) literature, (h) chemistry, actually function in the lives of high school (1) boys and (2) girls, of your community?
7. After investigation appraise the value of (a) household arts and of (b) manual training as given in a local school or system.
8. Find, study, and describe in writing, any existing provisions illustrative of these types of vocational education in your community: practical arts; prevocational; trade; continuation; agricultural; homemaking; commercial.
9. Restate and evaluate the six interpretations of, or attitudes toward, vocational education of secondary grade, stated in this chapter.
10. How can training in democratic and ethical ideals and sentiments best be coupled with specialized trade training?
11. How would you secure for youths, boys and girls, compelled to enter industry, skill and knowledge of advantage in a chosen occupation, and also the elements of general and of liberal education? What provisions would you make for education after entering industry?
12. Study the program, courses of study, and curricula of a modern American high school with reference to general or to definite liberal, culturistic, and utilitarian aims within the various divisions.
13. Study critically the chart of Farrington (Reference 7) and of Simmons (Reference 23) illustrating the various phases of the German school system.

14. Tabulate the special privileges granted only to graduates of certain Prussian schools in 1904. See Russell (Reference 21), pages 469–470.
15. Indicate the practical difficulties of enforcing compulsory education in the United States.

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CHAPTER III

ADJUSTMENTS TO INDIVIDUAL AND TO SOCIETY

Individuals and Society: The question of adjustment; the place of research; individual differences; types of individuals.

Society not Homogeneous: Miscellaneous population and the consequences; groupings of society; general occupational groups, distribution by years, industries, and sex; occupational groups in states; age-groupings of workers.

Youth Classified Within and Without the Schools: Three school problems; persistence and elimination; causes of elimination; results; maladjustments of groups within schools; vocational education not a cure; distribution of school enrollment; visible efforts at adjustment.

Summary. Problems. Selected References.

Individuals and Society

The question of adjustment. The idea of universal education may be associated in careless thinking with the fallacious notion of uniformity in schools, curricula, and methods as a necessary consequent. Universal education as a policy of the best civilization demands suitable and abundant opportunity for education for all kinds of persons regardless of age, sex, race, or economic status, and the various capacities and interests of individuals as well as the common welfare of all, necessitate wide variety in the programs and devices of formal education in order that universal opportunity may be realized. Advocates of vocational education in reacting from the "lock step" of traditional school methods, run the danger of foisting another kind of rigid uniformity upon our schools, where vocational courses are not constantly readjusted to the needs both of individuals and of society.

Much thought and many words have been used by theorists in philosophy and in education to determine whether the schools should be adjusted to the needs of the *individual* or of *society*. The superintendent engaged in the practical introduction of vocational education in any community encounters this question in a practical aspect, for he will have pressed upon him the demands for school-adjustments both in behalf of individuals and in behalf of groups.

It is foreign to the purpose of this book to enter discussion of the theoretical aspects of this problem, which may become confusing when we recall that society is a mass of individuals, and contrast the various meanings of the terms *need*, *desire*, *values*, as affecting individual and the social group. "Society" is defined as "Those persons collectively who are united by the common bond of neighborhood and intercourse, and who recognize one another as associates, friends, and acquaintances." That the word thus loosely used, may denote innumerable groupings of undesirable persons including thieves, anarchist rings, fanatical sects, or any vicious combination, is evident. In the effort to adjust education to the needs of "society," therefore, it is quite essential to maintain steadily a definite conception of society compatible with the ideals of American democracy, even though such a working definition may seem to be arbitrary in excluding from *society* certain elements which would be included in a more generic use of the term as denoting mere collectivism or mass. We may, therefore, agree to think of American society in this wise, when we speak of adjusting the school to its demands or needs. It is that major portion of our whole people who to date have nourished common interests, aims, and ideals regarding intelligence, morality, health, industrial activity, loyalty, and liberty—traits demonstrably characteristic of true Americans.

The place of research. To ascertain the needs of local and of general American society in order better to adjust schools

and industry is a valid use of the research method to which we shall refer in Chapter XII. This is essentially the method of the more scientific type of vocational-educational survey. It is equally important to learn the needs of the individual in order that we may provide just that articulation of his capacity and interests with the programs of the school helpful to him in becoming the best possible unit in society. It will be the aim of the truly efficient individual to develop and use his own powers without an injury or loss to self, that would be incompatible with his greatest contribution to human welfare. An altruism therefore that zealously guards the individual seems to be the cue for action in the frequent clash of the interests of the individual and of society, when radical readjustments of educational machinery are attempted. Educational research that contemplates something more than mere clerical work, the playing with school statistics, etc., will help to lay before the school administrator the facts both about the nature of the individual and also about the needs of various groupings of society.

For information about the individual as a psycho-physical organism physiology, anthropology, and psychology give us method and facts. The psychology of childhood and adolescence built upon the studies of such men as Hall, Baldwin, Thorndike, and Judd, is a recognized factor in the preparation of professionally trained educators. On the other hand, sociology and the work of the school surveyors are focusing scientific method in the study of the occupational and other groupings of society as a whole.

Individual differences. Equally fallacious with the notion of equality or uniformity of curricula, is the idea that human beings of a given group are near-duplicates. One notes easily the fact of individual variation in a large crowd, because of the visible differences in age, sex, physique, conduct. In a seemingly homogeneous group the individual differences with regard to abilities are not so easily discerned, but the differences are

real and often extreme as the experiments of Thorndike and others clearly show. The general causes of individual differences are heredity, growth, disease, environmental factors, practice.

The practical importance of what we think about individual differences in youth is greater than one may realize. For example: Schemes for instruction whether to classes or to individuals, promotion systems, prescription of manual training upon the assumption "that skill of movement is intimately connected with efficiency in thinking," grading and tests, legislation about the age-of-consent, and about child and woman labor—all these involve assumptions about the nature and amount of individual differences. Effective description of the individual differences among persons ideally should be accurate or quantitative—a work for the scientific student of human nature. Thorndike thinks that while our curricula are framed with some speculation concerning mental development as a guide, the "American public school system rests on a total disregard of hereditary mental differences between the classes and the masses."

Types of individuals. The student of the vocational education movement can not safely lose sight of the facts of individual differences when the matter of experimenting with agricultural, industrial, commercial, or homemaking curricula is concerned. It suffices at this point of our study merely to indicate qualitatively various types of human beings, enumerated in an illustrative exhibit based upon different criteria of classification. The following table was prepared by McDonald(10) following Professor Giddings. As numerous and very complex as human types appear to be from this table, the classifications are utterly inadequate, for the terms used are of the most general character. For example, note the crude differentiation of persons according to "mentality." Nevertheless, a brief study of this table (p. 64) impresses one with the gravity

TABLE I

Classification of Human Types (10)

- **A. As to genesis**
  - *a.* Chromatic race
    - I. White.
    - II. Yellow.
    - III. Red.
    - IV. Brown.
    - V. Black.
  - *b.* Sex
    - I. Male
    - II. Female.
  - *c.* Nativity
    - I. Native-born
      - 1. Native parentage.
      - 2. Foreign parentage.
    - II. Foreign-born.
- **B. As to personality**
  - *a.* Age
    - I. Minority
      - 1. Infancy.
      - 2. Childhood.
      - 3. Youth.
    - II. Maturity.
    - III. Senescence.
  - *b.* Vitality
    - I. Physically normal
      - 1. High type.
      - 2. Medium type.
      - 3. Low type.
    - II. Physically defective.
      - 1. Blind.
      - 2. Deaf.
      - 3. Crippled.
      - 4. Anemic.
      - 5. Tuberculous.
    - Border line types
      - 1. Retarded.
      - 2. Epileptic.
      - 3. Speech defective.
  - *c.* Mentality
    - I. Mentally normal
      - 1. High type.
      - 2. Medium type.
      - 3. Low type.
    - II. Mentally defective
      - 1. Feeble-minded
        - 1. Moron.
        - 2. Imbecile.
        - 3. Idiot.
      - 2. Insane.
  - *d.* Morality and sociality
    - I. The normal (and social)
      - 1. High type.
      - 2. Ordinary type.
    - II. The immoral (and unsocial)
      - 1. Untrustworthy.
      - 2. Incorrigible.
      - 3. Delinquent.
      - 4. Confirmed criminal.
- **C. As to environment**
  - *a.* Home conditions
    - I. Normal
      - 1. High type.
      - 2. Medium type.
      - 3. Low type.
    - II. Subnormal
      - 1. Neglected.
      - 2. Deserted or homeless.
      - 3. Ill-treated.
      - 4. Orphan or half orphan.
  - *b.* Literacy
    - I. Literate.
    - II. Illiterate.
  - *c.* Vocational background
    - I. Professional.
    - II. Artisan.
    - III. Unskilled.
    - IV. Idle.
  - *d.* Economic background
    - I. Wealthy.
    - II. Middle class.
    - III. Poor
      - 1. Insolvent.
      - 2. Dependent.
  - *e.* Political background.
  - *f.* Religious background.

of the problem of adjustment of school organization to needs both of individuals and also of population groups within the heterogeneous populations found in some portions of our country. If the principles we have stated above are true, the fact of these differences can not be ignored by the pioneers in vocational education.

Society not Homogeneous

Miscellaneous population and the consequences. Before the World War our nation was a heterogeneous population. Sons of Puritans and of Cavaliers, peoples of English, Scotch, Dutch, Irish, French, Italian, Spanish, Russian, Polish, German, Scandinavian, Swiss, Japanese, Chinese, Indian, Negro, and other races or extraction make here their homes. The population of the United States is mobile, especially in certain states and cities. Ayres' studies in 78 American city school systems brought out these approximations: As a rule only 16 per cent of the fathers of thirteen-year-old children were natives of the city where found; 24 per cent were born in the same state but not in the same city where living; 20 per cent were born in other states; and 40 per cent were foreign born.(2a) Notwithstanding manifold differences, the invisible, indissoluble bonds of certain convictions held in common, of sympathy and understanding in striving for the great ends of democracy,—these real bonds of democracy so far hold like steel. Hereafter the currents of immigration may tend to make our population even more miscellaneous and our problems of adjustment in education correspondingly more difficult. Plato enunciated principles that indicate possible results of population-characteristics, principles of interest to educators who would maintain a sane balance in advocating the new in education while they discard the old:

> . . . When a colony is of one race, and has the same language and the same laws, it possesses a kind of friendship as being a partaker

in the same holy rites, and everything else of a similar kind, nor does it easily endure other laws, and a polity foreign to what it had at home. . . . But on the other hand, a colony, composed of all kinds of people flowing together to the same point, will perhaps be more willingly obedient to certain new laws; but to conspire together, and, like a pair of horses, to froth together, as the saying is, individually to the same point, is the work of a long time and very difficult. (Plato, *The Laws*, IV, 4.)

Giddings, the sociologist, thinks that these words of Plato express five cardinal generalizations about the nature and behaviour of human society: First, miscellaneous groupings of people, as well as groupings of kindred, are spontaneous, natural. Secondly, the ethnically homogeneous groups have a psychological and physical unity, a basis of understanding not present in the heterogeneous group. Thirdly, there is nevertheless, a collective behaviour in the miscellaneous group. Fourth, in the heterogeneous group, the practical working level of collective action is difficult. Fifth, violent breaking away from an old order of things to experiment with the new, to abandon old traditions, is more likely to occur in the heterogeneous than in the homogeneous group.(7)

Groupings of society. The concept "needs" of society seems even more complex when we recall that human beings fall naturally into groups. O'Shea thus explains and illustrates this natural tendency:

In any biological group, the markedly exceptional individual in respect to any particular trait generally arouses the antagonism of some or all of the remaining members, unless he be very clearly a leader and is accepted as such. Only birds of a feather can flock together. The odd sheep in the flock is constantly plagued by the rest of the group, and they would eliminate him if they could. The treatment of the ugly duckling is typical in principle of that accorded the peculiar individual in the life of the forest, or elsewhere. In previous chapters we have noted instances showing that this same phenomenon

may be seen in human society. Study the life of the playground, and it will be seen that a boy in any way markedly peculiar is apt to become an object of more or less direct and persistent bullying by the crowd. The group will not easily tolerate any considerable departure from general group characteristics, either in respect to physical traits, or to dress, manners, or any attitudes or actions affecting the interests, customs, or practices of the group.(11)

There are innumerable "social groupings" within our American society and each group may have a distinctive need, e. g.: groups of family, kinship, race; county, city, state, nation; cultural groups, as of music, art, science, history, literature; religious groups; business and industrial groups, such as partnerships, companies, corporations, associations, unions; occupational groups, as of the homemakers, farmers, miners, factory workers, carpenters, plumbers, bricklayers, electrical workers, engineers, printers, barbers, cooks, tailors, railroad workers, nautical men, soldiers, officers, doctors, lawyers, ministers, artists, writers, clerks, brokers, salesmen, public officials. When legislatures and school officials are confronted by the special needs and demands of these different groupings of society, the demands should be evaluated with reference to society in the larger sense defined. In the direction of public education, there enters the principle of preserving a hierarchy of aims and ideals, of the balancing and subordination of aims (ante, p. 45) of individual, of group, and of society to an ultimate aim under democracy.

General occupational groups. The field of vocational education may be comprehended more clearly when we view tables showing the kinds and numbers of occupations in our country. It is a difficult thing to classify all occupations into logically consistent groups. Tables showing the relative numbers of workers in hundreds of different occupations are compiled every ten years by the United States Census. No statistical table is quite adequate to portray existing conditions, since the incessant

changes of industry and of population, modify the figures of any such table before the printer's ink is dry upon the page. Remarkable changes, owing to the World War, would appear in census tables were it possible to revise them to the present hour. For example, the enumeration of 77,153 persons as "soldiers, sailors and marines" would have been augmented to millions in the year 1918.

Distribution by years, industries, and sex. Table II shows the groupings of workers contained into an occupational classification by sex, and from 1880 to 1910. Contrasting the numbers in the respective industrial groupings, and by sex, during the past 30 years, we obtain interesting information concerning the general drift of workers in diversified activities during that period.

The table shows that while there were in 1910 six times as many men as women in agriculture the country over, nevertheless the proportion of all male workers thus engaged had decreased twelve per cent since 1880. More than five times as many men as women were in manufacturing and mechanical industries in 1910. There was relatively a somewhat smaller number of women in manufacture in 1910 as compared with 1880, probably owing to better laws regarding child and woman labor. The industrial changes due to the War have, of course, brought thousands of women into such work. There were about nine per cent more of all male workers in mechanical and manufacturing industries in 1910, contrasted with the record of 1880. With regard to domestic and personal service markedly smaller percentages of all female workers were found in 1910 (cf. 32.5 per cent with 44. 6 per cent). The increase of women in "trade and transportation" was relatively greater than of men, due to the tendency of women to enter phases of commercial life. The awkward five-fold classification of Table II conformed to that of early censuses. Table III of the Thirteenth Census conforms to a ninefold rather than to the older four-

TABLE II

Occupational Statistics

Sex and general division of occupations	1910		1900		1890		1880	
	Number	Per cent distribution	Number	Per cent distribution	Number	Per cent distribution	Number	Per cent distribution
Both Sexes								
All occupations	38,167,336	100.0	29,073,233	100.0	23,318,183	100.0	17,392,099	100.0
Agricultural pursuits	12,567,925	32.9	10,381,765	35.7	9,148,448	39.2	7,713,875	44.4
Professional service	1,825,127	4.8	1,258,538	4.3	944,333	4.0	603,202	3.5
Domestic and personal service	5,361,033	14.0	5,580,657	19.2	4,220,812	18.1	3,418,793	19.7
Trade and transportation	7,605,730	19.9	4,766,961	16.4	3,326,122	14.3	1,871,503	10.8
Manufacturing and mechanical pursuits	10,807,521	28.3	7,085,309	24.4	5,678,468	24.4	3,784,726	21.8
Male								
All occupations	30,091,564	100.0	23,753,836	100.0	19,312,651	100.0	14,744,942	100.0
Agricultural pursuits	10,760,875	35.8	9,404,429	39.6	8,378,603	43.4	7,119,365	48.3
Professional service	1,151,709	3.8	827,941	3.5	632,646	3.3	425,947	2.9
Domestic and personal service	2,740,176	9.1	3,485,208	14.7	2,553,161	13.2	2,237,493	15.2
Trade and transportation	6,403,378	21.3	4,263,617	17.9	3,097,701	16.0	1,808,445	12.3
Manufacturing and mechanical pursuits	9,035,426	30.0	5,772,641	24.3	4,650,540	24.1	3,153,692	21.4
Female								
All occupations	8,075,772	100.0	5,319,397	100.0	4,005,532	100.0	2,647,157	100.0
Agricultural pursuits	1,807,050	22.4	977,336	18.4	769,845	19.2	594,510	22.5
Professional service	673,418	8.3	430,597	8.1	311,687	7.8	177,255	6.7
Domestic and personal service	2,620,857	32.5	2,095,449	39.4	1,667,651	41.6	1,181,300	44.6
Trade and transportation	1,202,352	14.9	503,347	9.5	228,421	5.7	63,058	2.4
Manufacturing and mechanical pursuits	1,772,095	21.9	1,312,668	24.7	1,027,928	25.7	631,034	23.8

TABLE III

Occupational Groups

Sex and general division of occupations	Number, 1910	Per cent distribution
Both Sexes		
All occupations	38,167,336	100.0
Agriculture, forestry, and animal husbandry	12,659,203	33.2
Extraction of minerals	964,824	2.5
Manufacturing and mechanical industries	10,658,881	27.9
Transportation	2,637,671	6.9
Trade	3,614,670	9.5
Public service (not elsewhere classified)	459,291	1.2
Professional service	1,663,569	4.4
Domestic and personal service	3,772,174	9.9
Clerical occupations	1,737,053	4.6
Male		
All occupations	30,091,564	100.0
Agriculture, forestry, and animal husbandry	10,851,702	36.1
Extraction of minerals	963,730	3.2
Manufacturing and mechanical industries	8,837,901	29.4
Transportation	2,531,075	8.4
Trade	3,146,582	10.5
Public service (not elsewhere classified)	445,733	1.5
Professional service	929,684	3.1
Domestic and personal service	1,241,328	4.1
Clerical occupations	1,143,829	3.8
Female		
All occupations	8,075,772	100.0
Agriculture, forestry, and animal husbandry	1,807,501	22.4
Extraction of minerals	1,094	[1]
Manufacturing and mechanical industries	1,820,980	22.5
Transportation	106,596	1.3
Trade	468,088	5.8
Public service (not elsewhere classified)	13,558	0.2
Professional service	733,885	9.1
Domestic and personal service	2,530,846	31.3
Clerical occupations	593,224	7.3

[1] Less than one-tenth of 1 per cent.

fold grouping. It displays somewhat more satisfactorily the occupational groupings of all gainful workers in the year 1910.

Occupational groups in states. Generalized percentages, such as are seen in Tables II and III, and averages contain an illusory element. For example, the figures showing occupational distributions in the forty-eight states of the Union vary widely from the general tendencies of the country as a whole. This fact is shown by Figure I. So far as the distribution of occupations is a partial basis for the establishment of different kinds of vocational education, a proper correlation should always be sought between (a) the needs of industry in a given state or local community, (b) the general national need, and the general aim of public education. The means for securing this correlation is the vocational-educational survey referred to in the last chapter of this book. Figure I exhibits some marked contrasts between New England, Southern, Western, and North Central States. This chart, of course, is being modified by contemporary industrial changes, especially in the states of the West and the South where development is now rapid.

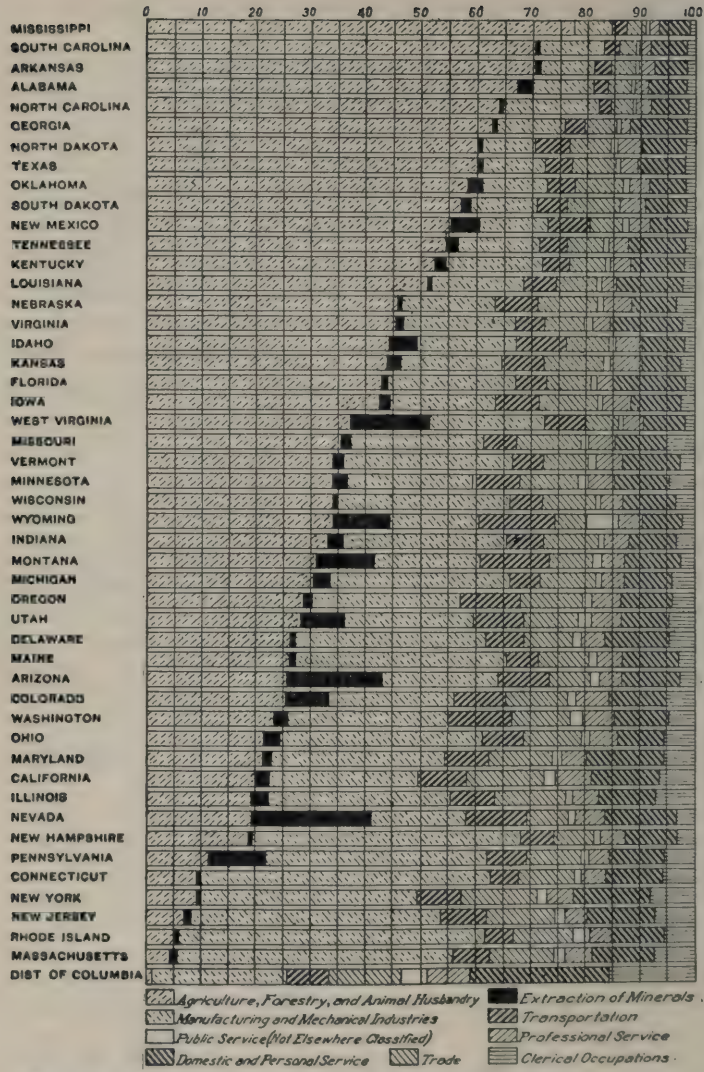


FIG. I.—PROPORTION OF PERSONS ENGAGED IN OCCUPATIONS BY STATES, 1910. [From U. S. Census]

Age-groupings of workers. In view of the two tendencies, (1) to raise the age limit of compulsory school attendance, (2) to keep children out of industry, a summary of figures representing the proportions of workers belonging to each age-group in 1910 is instructive and will be interesting for comparison in future years. Figure II, from the Census, affords a general idea of the distribution of gainful workers throughout the country with regard to age, and each sex, and both sexes.

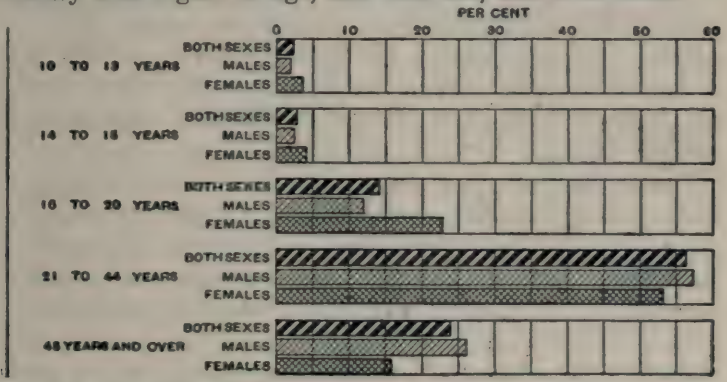


FIG. II.—PROPORTION WHICH THE GAINFUL WORKERS OF EACH SPECIFIED AGE CONSTITUTED OF ALL GAINFUL WORKERS, 1910

YOUTH CLASSIFIED WITHIN AND WITHOUT THE SCHOOLS

Three school problems. A consensus of enlightened opinion is that children should be kept out of industry and in the schools at least until sixteen years of age and even until eighteen years. From the economic viewpoint the competition of child and woman labor with the skilled adult, and from the hygienic standpoint the wholesome development of the human organism warrant this conviction. Questions about *age, persistence in school, causes of elimination from school, entrance into industry, maladjustment of prevailing school organization to groups of children classified by age and progress standards,*—arise where-

ever the establishment of prevocational schools, or continuation schools, or trade courses, night schools, or day vocational schools, is undertaken.

It is well in considering the problems of vocational education that we be kept conscious of the main facts about school (a) elimination, (b) maladjustment, in age-grade groups, (c) enrollment and costs in the existing schools. This understanding is desirable particularly for those who do not consider "vocational education" merely as something to be added, an adjunct, or appendage to the public schools, but who seek rather a wise and gradual renovation of the whole system consistent with the demands of individual and social development.

Persistence and elimination. At the end of the first chapter we called attention to the necessity of stopping premature dropping out of pupils from school as one means of preserving the ideals of democracy. Faith in the power of the schools to cure some evils of society will be cast down, if the population does not pass through the school. Even perfect schools—perfect with regard to programs, plant, equipment, and teachers, would fail, if pupils do not enroll, or if they are eliminated prematurely. Elsewhere we have indicated the disparity of numbers in lower and higher schools (see p. 84) and the trend of elimination (see p. 79). This matter of the dropping of pupils from school is a cardinal fact touching movements for improved educational legislation, for compulsory attendance, prevocational and continuation schools, evening classes, and problems of efficiency both in the schools and in industry. It is desirable to answer two questions: one, "What is the actual amount of elimination?" The other, "What are the causes of elimination?" Unfortunately, data are lacking for exact answers to the first, and aside from questionnaire studies expressing opinions, there are only about three extended, quantitative studies bearing scientifically upon the second question.

The true amount of elimination will be ascertained only when through a period of consecutive years, school authorities carefully keep accumulatively the results of individual record cards covering the school history of each child. Accurate, accumulative records of this type are not the rule, notwithstanding the recommendations of the Committee on Uniform Records and Reports. Various arithmetical devices for approximating the per cent of pupils who leave school after entering Grade I and before completing Grade XII have been used. Thorndike, Ayres, and Strayer, about ten years ago proposed three different methods of estimating the numbers of beginners entering annually, in a given distribution of school enrollment in the eight grades. Using an estimate of the number of beginners twelve years ago as a basis, this number was divided into the number enrolled in each of the grades, the decimals resulting, of course, indicating the percentages of "survivors" in each grade—the converse of the eliminated.

The studies of Ayres,(2b) Strayer,(16) and Thorndike(18b) agreed roughly, in showing that about 50 per cent of pupils survived through Grade VIII, only about 10 or 12 per cent through Grade XII, the fourth year of the high school. Studies of this crude type showed wide variation among hundreds of cities. Strayer estimated that in the 318 cities from which he gathered returns by means of his questionnaires "considerably more than half of the children are eliminated between the ages of 13 and 15 inclusive."

More recently in the progressive city of Cleveland, Ohio, by Ayres' method, it was found that the proportion of survivors in the fourth year of the high school was about 19 per cent, while nearly two-thirds reached the eighth grade,—doubtless an unusually favorable showing.

Computations for June, 1915, showed that nearly half of the pupils were gone at 15 years; at 16, two-thirds had dropped out; and at 17, only one in five remained. Figure III shows the

relative numbers of pupils among a hundred beginners who remained in school in Cleveland at each age from 12 to 20.

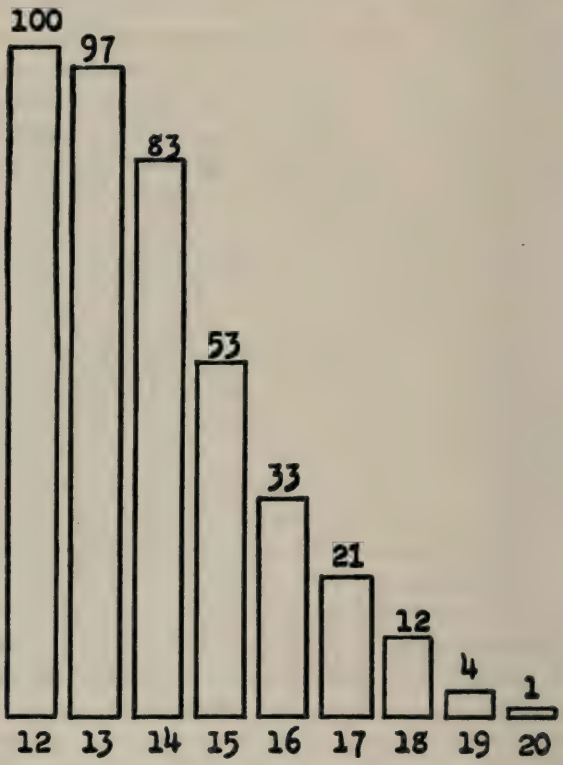


FIG. III.—COLUMNS REPRESENT NUMBER OF PUPILS AMONG EACH HUNDRED BEGINNERS WHO REMAIN IN SCHOOL AT EACH AGE FROM 12 TO 20.

Investigations during two years in New Orleans indicated in 1915 that less than 50 per cent of the white children, and less than 10 per cent of the negro children remained through Grade

VIII. The study of the San Francisco schools made under the direction of the U. S. Commissioner, gives these figures:

> Approximately 75 per cent of the children enrolled in Grade IIa have disappeared by the time Grade Va is reached; only 6 per cent enter high school, and only 25 out of each 1000 children entering Grade IIa are graduated from high school. "Not all of these pupils leave the school system permanently without completing the high school course, since investigation shows many pupils who are one or more years behind the grades in which they would normally be found," says the San Francisco report.(15)

Briggs claimed in 1919 that one of the most pleasing results of the secondary school development is its increased holding power, but that the losses between the beginning of the ninth grade and graduation were still very large. Quoting the report of the Kansas City Bureau of Measurements Briggs sets forth that in Kansas City, 1891, only four per cent of the pupils who entered the elementary schools completed the high school course, but in 1917 this per cent had increased to 19.8. Contrasted with the record of seventeen other cities the report asserts that the approximate percentages of all pupils entering the public schools who complete the high school course is from 7.3 and 7.4 for Newark and New York, to 25.8 and 25.9 for Portland, Oregon, and Seattle.(20)

The U. S. Education Reports, 1916 and 1917, (vol. II, pp. 6–8) contain the estimate that, throughout the United States, of every 1000 pupils entering the first grade of 1906–1907, about 117 will graduate from the high school in 1918. Of the 1000 pupils entering the first grade in 1906–1907, about 1.5 per cent will graduate from college.

It is probable that marked inaccuracies exist in all the above estimates. It is not necessary here to enter into detailed discussion of the statistical fallacies of contemporary school reports. The combined figures of the United States Census for children

and youth (a) who were eliminated from school, (b) who never entered school, reveal the relation between population and actual school enrollment. Figures of this kind for the whole country are the resultants of many forces and differences economic, racial, educational, in the various states. Such a generalized statement can be prepared only by the Federal Census. On page 79 is a diagram (Figure IV) which exhibits the percentage of children attending school for each year of age for the ages 6 to 20 years,—the ages being taken as of "last birthday." Significant are the downward breaks of the curve at 13 years and again at 14 years of age. The improvement of child labor legislation since 1910 doubtless will disclose an elevation of the curve at these points, after the next Census.

Causes of elimination. The causes of elimination as recorded usually in the reports of school superintendents are tabulated after compiling the expressions of opinions made by teachers in the case of withdrawals. Typical reasons given for the withdrawal of pupils are these: Financial troubles, desire to earn, discouragement by absence, slow progress, failure and non-promotion, lack of interest, ill health, dissatisfied with course of study, withdrawn by parents, dissatisfaction with school administration, work at home, dislike of school, etc. Years ago Professor Book attempted by questionnaire to ascertain from high school pupils why their companions had withdrawn. A common allegation, he ascertained, was "lack of interest." Better than use of the questionnaire in studying the causes of elimination, is the attempt in each case of withdrawal to interview the parents, the eliminated pupil, and the teacher, and to study home conditions. A beginning in such sociological-pedagogical studies has been made by Van Den Burg, by Railey, and by Holley. It has by no means been demonstrated that economic reasons, poverty, etc., predominantly force to withdrawal the majority of children who quit school prematurely. Causes vary in different communities,

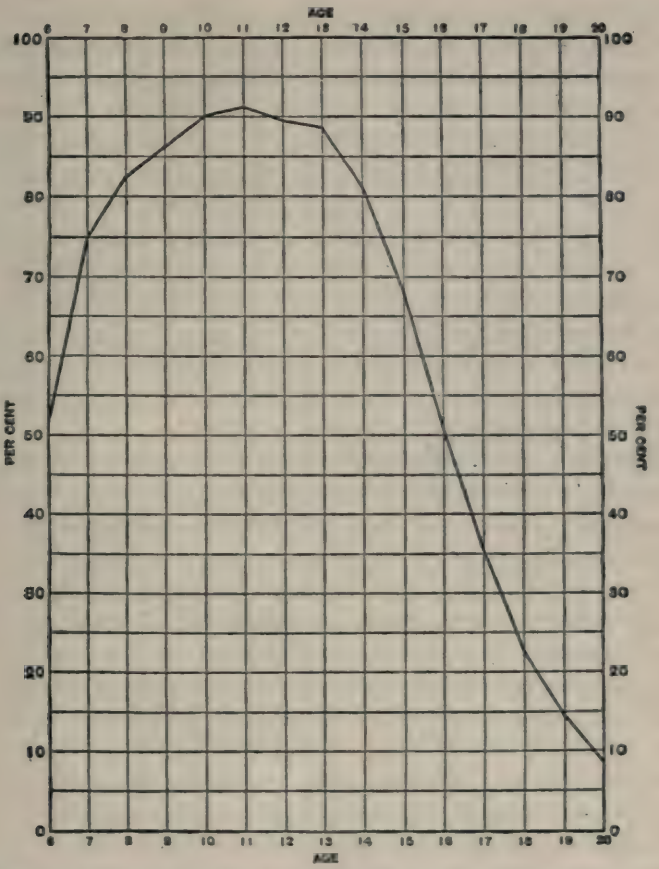


FIG. IV.—PERCENTAGE ATTENDING SCHOOL IN THE TOTAL POPULATION 6 TO 20 YEARS OF AGE, 1909–10

and in the meantime, the power of the schools to hold through interest and profitable work is seriously questioned—a problem too intricate for further analysis in these pages. The causes of elimination are complex, including an interplay of the in-

fluence of home, play, industry, the school in its various aspects, and the desires and energies of the child. Beneficial, doubtless, the introduction of vocational courses and schools will prove to be, in the lessening of unnecessary elimination. It is futile and illusory to hope that the introduction of vocational courses of secondary or elementary grade will cure the evil of elimination. However, they who regard indifferently or as "makeshifts" all continuation classes, part-time schools, and vocational, unit courses given in the evening, probably overlook the incontrovertible facts of heavy elimination of young persons before they have finished either high or even elementaryschools. Until the fact of elimination is remedied there must be supplemental training for that too large group of young people outside of the school and now prematurely in industry.

Results. Early eliminations of pupils between 14 and 18 years from school generally result in waste to the individual and to society. There may be a few schools so unhealthful, artificial, and nearly worthless that the shop is a better place for the youth than such a school. However, reports compiled from work certificates and studies of individuals in numbers, show that generally there is a pathetic aimless drifting from job to job after the eliminated boy or girl leaves school. The unskilled and temporary nature of the miscellaneous jobs open to young boys probably concerns age and physical strength more than education—i. e., "all boys may look alike" to an employer who has not a fair promotion plan or apprentice system. Boys and girls who remain in a proper school long enough to secure some special skill and knowledge of vocational value will in the long run have an advantage.

Twenty-five cases selected by the writer at random from among more than a thousand boys under fifteen years of age, have records of an average of from four or five jobs during the first year out of school. These young boys stated the jobs they had already tried and also their preference or "ambition." E. g., *Boy A:* Errand boy, plumber's

helper, office boy, in grocery,—ambition, bookkeeper; *Boy B:* Wagon boy, office boy, clerk for soap company, office boy—ambition, civil engineer; *Boy C:* In grocery, box factory, on ice wagon, blacksmith—ambition, blacksmith; *Boy D:* Folding bags, on delivery wagon, wrapping butter, on ice wagon—ambition, stenographer; *Boy E:* With jeweler, paper carrier, in cigar store, in office—ambition, stenographer; *Boy F:* In wine cellar, wine testing, with druggist, horse attendant—ambition, horse doctor; *Boy G:* In plumbing shop, with printer, newsboy, with broker—ambition, plumber; *Boy H:* Bundle boy, with plumber, office boy, in wine cellar— ambition, chauffeur; *Boy I:* Water boy, messenger, cash boy, office boy—ambition, lawyer; *Boy J:* Office boy, on wagon, in grocery, broom factory—ambition, electrician; *Boy K:* Window boy, box boy, cash boy, errand boy—ambition, sign painter.

It is true that one may cite notable examples of men with little schooling who have attained distinction. Their very conspicuity is the exception that proves the rule. In spite of severe handicaps some men and women learn, and gain great success. We may profitably remember, however, that there are only three general methods of learning and of profiting by experience, and that given inherited capacity, it is by one or by all of these that we attain any knowledge or skill. The methods are: (1) Trial and error, (2) imitation, (3) reason and forethought. The first is the costly and wasteful "school of experience." The second is useful where good examples are abundant and are consciously chosen. The third is peculiarly a human prerogative. The likelihood is, that the young, uneducated boy or girl who drifts from pillar to post in industry, will profit little by his trials and errors in the choice of occupation related to natural aptitude. Habits of failure early become fixed. If final selection of occupation is made, it is likely to be the result of merely accidental circumstances. In the meantime, years have slipped by; oftentimes health and morals have been undermined. The total results for society are economic waste, social unrest, increased poverty and misery. That great group

of the discontented, groping, incapable, ignorant, physically deteriorated—always a menace to civilized society,—is in large measure a final result of the process begun in premature elimination from school, and divorcement from wholesome living in childhood.

Maladjustment of groups within schools. Vocational education in certain of its phases, especially of the "prevocational" type, is sometimes spoken of optimistically as a panacea for maladjustments of children with reference to age and grade. Forms of manual training, and of elementary industrial work have been recommended for "retarded" children. In the treatment of the actually feeble-minded, as at Vineland, N. J., good educational use is made of forms of mechanical industry.

The word "retarded," however, has been grievously abused by school administrators, medical inspectors, and students. The term *retarded* is variously used to denote children suffering from amentia; or to denote those who repeat school grades because of failure; or more inclusively, to denote all children who are over-age for grade for any reason. In this last sense the word is used most commonly. Statistics are piling up showing percentages of children in school systems who are (a) "over-age," (b) "at-age," (c) or "under-age" for their respective grades. That is, if six years of age be arbitrarily adopted as the proper age for the first grade, seven years for the second grade, etc., then a child is technically "retarded" if he be nine years of age and in the second grade, or eight years of age in the first grade, etc. His being over-age may be due to: (1) *slow progress*, or repetition (which in time may be the fault of the home, or of the child, or of the school); (2) *late entrance*, after which he made normal progress, i. e., a grade per year; (3) *lost time*, or intermittent attendance. Thus, a "retarded" child, then, may be actually of slow, of usual, or even of rapid progress. This fact and the means for ascertaining it was set forth in the early monograph of Van Sickle, Witmer, and Ayres. Correct

age-grade-progress classification is of a ninefold, rather than of a threefold type: namely, (1) under age and rapid progress; (2) under age and normal progress; (3) under age and slow progress; (4) normal age and rapid progress; (5) normal age and normal progress; (6) normal age and slow progress; (7) over age and rapid progress; (8) over age and normal progress; (9) over age and slow progress. Nevertheless some of our prominent investigators and writers have neglected the ninefold division and have used the easier but imperfect threefold grouping, a grouping perhaps chiefly valuable to disseminate "facts of agitation," and yet one which may be grossly misleading. Some instances of "retardation" evince excellent adaptation; still other instances indicate feeble-mindedness. Chronological, physiological, and mental ages are distinct measures of maturity which should be remembered always in attempts to classify school children, and dependence upon a mere age-grade classification belongs to past days.(8c)

Vocational education not a cure. In some cities as many as fifty per cent of the school children have been classed as "retarded" according to the age-standard of the schools. It is futile to think that vocational education is the sole remedy for this kind of maladjustment. Retardation in our schools is the resultant of many interacting factors, some of them ignored or obscured heretofore by conventional statistics. Wallin summed up a dozen different plans and devices for facilitating promotion, and Cubberley reviewed recently more than a score of special devices looking toward better adjustment of the schools. Elastic systems of grading, improved curricula, economical methods of instruction and learning, hygiene, coöperation with the home, more money to obtain high-class teachers—these are the kinds of remedies needed. Whether as prevocational education in the elementary schools or as specialized occupational training in the secondary schools, vocational education will not become a cure-all for school evils.

Distribution of school enrollment. With the usual limitations of generalized statistics, Table IV affords a review of the comparative enrollments and costs estimated by the United States Bureau of Education for all the schools of the country during 1916.

TABLE IV

SCHOOL ENROLLMENT AND ESTIMATED COST IN 1916

Classification	Enrollment, 1915	Estimated per capita cost	Estimated total cost
Public elementary schools	18,375,225	$28.86	$530,320,030
Public high schools	1,328,984	56.54	75,140,755
Private elementary schools	1,615,091	32.00	51,682,912
Private high schools	155,044	94.10	14,589,640
Other public and private secondary schools	80,944	157.47	12,746,252
Universities, colleges, and professional schools	303,223	335.57	101,752,542
Normal schools	100,325	158.34	15,885,461
Commercial and business schools	183,286	50.00	9,164,300
Reform schools	57,237	157.92	9,038,867
Schools for the deaf	14,080	300.80	4,235,264
Schools for the blind	5,253	498.34	2,617,780
Schools for the feeble-minded	20,181	555.42	11,208,931
Government Indian Schools	33,009	116.69	3,851,820
Schools in Alaska supported by the Federal Government	3,436	56.13	192,863
Other public schools in Alaska	2,503	50.00	125,150
Orphan asylums, etc.	20,000	200.00	4,000,000
Private kindergartens	77,717	32.00	2,486,944
Miscellaneous, music, art, etc.	60,000	100.00	6,000,000
	22,435,538	38.11	$855,039,511

Noteworthy facts illustrated in Table IV on page 84 are four in number:

(1) So far as numbers of pupils are concerned, and the fact of control of each generation of our people, the elementary schools—not the high schools or the colleges, present both the gravest problem and also the richest opportunity, in formulating an education adapted to the ends of knowledge, skill, and ethical idealism compatible with our democracy.

(2) In view of the leadership overwhelmingly demonstrated by men and women who have gone through high school, or college, or both, it is to be regretted that the enrollment in these institutions is relatively so small.

(3) The annual cost of elementary education is about sixty per cent of the total annual cost of education, but the estimated per capita costs of elementary education are about one half of that in public high schools, an eleventh of that in higher institutions.

(4) The table does not indicate important groupings within elementary and high schools.

In order to observe these major groupings within the schools just referred to, we may study Table V.

TABLE V

Distribution of School Enrollment for 1915 According to Estimated Percentages

Schools	Estimated per cent	Estimated enrollment
First grade	21.4	4,697,724
Second grade	13.4	2,956,568
Third grade	12.7	2,780,653
Fourth grade	12.0	2,654,714
Fifth grade	10.2	2,254,908
Sixth grade	8.8	1,849,104
Seventh grade	6.8	1,525,261
Eighth grade	5.8	1,271,384
Total elementary	91.1	19,990,316
First year high school	2.9	629,432
Second year high school	1.9	417,535
Third year high school	1.3	292,180
Fourth year high school	1.2	225,825
Total high school	7.3	1,564,972
Higher Institutions	1.8	403,548
Grand total	100.	21,958,836

In interpretation of Table V we should note:

(a) The disparity between the per cents of pupils respectively in Grade I (21.4), Grade VIII (5.8) and Fourth Year of High School (1.2).

(b) The lower grades contain many "repeaters" in the grades, and therefore the diminishing numbers enrolled as we ascend the grades do not indicate the true amounts of eliminations or withdrawals from school.

(c) The enrollment of higher institutions is but 1.8 per cent of the total school enrollment. That is, all of the colleges, uni-

versities, and professional schools enroll in their four or more classes, a total group comprising less than one half of one per cent of the total population of the country.

(d) It is a common claim that high schools, academies, colleges and universities have been directed mainly to the preparation of professional people—lawyers, doctors, teachers, engineers, ministers. It has been said that secondary schools and colleges have been rich—while specialized vocational schools and courses for the masses of our workers, who do not enter college or even complete the high school, have been utterly inadequate. It is further claimed by the disgruntled with the public schools that the elementary schools do not in any sense prepare children for livelihood. The first claim and contrast is not so startling when we recall the essential leadership exercised by that small group of men who have passed through college—our scientists, statesmen, physicians, educators, lawyers, surgeons, ministers. Society would degenerate and fall without the leadership of brains. Higher institutions require not less but greater support and enrollment. The second claim has some merit where schools have been formalized, but it loses force when one regards the best type of free, elementary school as affording truly a good general basis for all occupational activities. In a very real sense the American elementary school is fundamentally vocational and it ministers to the largest and most important group of all.

Visible efforts at adjustment. The kinds of schools indicated in the two tables above attest unmistakably the effort to adjust public education to the actual needs of population groups. From this point of view the extremely wide variety of schools—elementary, secondary, higher, vocational—can be better understood, than by thinking of the manifold kinds of existing schools as merely a confusing mass of competing institutions. The endless differentiations within each of the eighteen kinds of schools indicated in the tables is of course far reaching. The basis of

all these differences in schools is fundamentally a more or less conscious attempt to adjust education to the needs of individuals and social groups. The new adjustments necessitated by the vocational movement involve all of the problems mentioned in the preceding pages, and many other issues which may be designated as "social problems." To state for the reader some of these problems in relation to vocational education is the business of the next chapter.

Summary

1. Good schools can not remain static. Sensitive to the real needs of individuals and of society they must be changed constantly under wise direction. A vocational course that can not be thus adjusted is out of place as truly as a formal, bookish one. The method of data-getting and organization of necessary facts about the need of the individual as a psycho-physical organism, and about the need of the community is indispensable for adjustment.
2. The plain fact of individual differences of capacity and of interest among persons who may be classified alike is important in the construction of all educational programs.
3. Groupings of the population upon the bases of race, geographical location, occupation, and social, esthetic, political, or religious interests render our people highly heterogeneous, although the bonds of conviction about democracy hold strongly. Consideration of the nature and of the relative stability of populations—national, state, local—is fundamental in the planning of educational and industrial programs. The mobility of labor bears an important relation to the type and duration of industrial education courses.
4. Distinctions between the *desires* and the *needs* of social groups can be discerned. Immediate aims or objectives of schools must harmonize with the ultimate good of society

as a whole, rather than necessarily with the demands of some one group or of groups of persons however influential. The principle of the relativity of all aims is an indispensable guide to schoolmen.

5. The groupings of society are highly complex and variable. Men and women are usually identified strongly with some particular group, occupational, political, religious, or social, and therefore are likely to make both personal and collective demands upon the schools.
6. The fields of vocational education comprise chiefly the common (frequent) activities of the majority of people. Occupational statistics are invariably inadequate to show the actual, present status of occupations but are useful if studied and interpreted rightly. Facts concerning predominant industries, ages and sex of workers, stability of occupations, etc., must be weighed in providing suitably for specialized, vocational education in any community. The facts should be obtained both for the local community and also for the state and country as a whole in order to provide an actuarial basis preliminary to the intensive study and establishment of vocational courses.
7. Reports of the United States Commissioner of Education show that about 91 per cent of the public school enrollment is in the elementary schools, 7 per cent in the high schools, and 2 per cent in the higher institutions. About two-thirds of the total expenditures for education ($855,039,511 in 1915) are spent annually for the public elementary and public high schools. From the standpoint of numbers of pupils and of costs, the lower schools, especially the elementary schools, present the most stupendous opportunity and responsibility of education for democracy.
8. Elimination, or premature withdrawal of pupils from the lower schools is a menace to universal education and to

democracy, although there seems to be an encouraging increase of persistence of attendance in schools. Probably eleven or twelve pupils out of one hundred who enter the first grade of public schools as a rule graduate from high schools. To ascertain the amount and the causes of elimination and the remedies therefor, is an urgent problem in any school system. There are large numbers of boys and girls between 14 and 18 years of age now in industry who should be in school. Meanwhile the general and the vocational education of those persons who have withdrawn from school to enter industry unprepared for citizenship and efficiency must be continued in part-time and in evening schools.

9. Age-grade maladjustment. The fallacious classification of children according to "age and grade" has led to ambiguity in the use of the term *retardation* which may refer merely to pupil's being classified because of late entrance or lost time with grade marked off for younger children, or it may refer to physical and mental arrest of growth. Vocational education even of an elementary or prevocational type is not, as suggested by some enthusiasts, a cure-all either for elimination or for retardation.
10. The wide variety of educational opportunity open to all in American schools is evidence of great progress in the adjustment of education to the needs of the individual and of society.

Problems

1. From individuals, and from groups of workers, born abroad, ascertain why they came to the United States.
2. Explain why a miscellaneous group, great or small, may be less conservative than a group of individuals similar in race or origin.
3. To what extent have the arts and crafts as taught in Europe

been influential in your community because of the presence of some skilled worker born abroad? Give concrete instances.

4. How can you explain the actions and words of self-styled radicals who before or during or after the War fled from Europe to this country, and nevertheless who sneer at our customs and workers, rich or poor, in industry? Is the phenomenon one of ordinary turpitude, or do the cases you know evince symptoms of dementia?
5. Ascertain the numbers of schools and teachers that entered into the life-record of each pupil in a high school group. Ask the pupils to describe in writing the effects upon themselves of the changes noted.
6. Repeat the Ayres study of the occupations, birthplaces, etc., of fathers of thirteen-year-old pupils, in a small city, or community, school system. Tabulate the returns. (2a)
7. Endeavor to ascertain the specific *aims* of every teacher in a school, or system, as concerns the work of his or her class for the term or semester. Note the different aims, e. g., (a) vague, (b) clear cut, (c) cultural, (d) disciplinary, (e) utilitarian, etc., etc. In view of the nature of the work, how may the immediate aim in each instance be adjusted to a broad ultimate aim or ideal for the whole school?
8. If certain societies, organizations, or groups of citizens (e. g., corporations, unions, clubs, churches), were formally to demand that certain desires of theirs concerning vocational education should be met by the School Board or Superintendent, aside from diplomacy what criterion of values should determine the response?
9. Estimate for your own city during 1910 the percentage distributions of workers in the nine occupational groupings of the U. S. Census. For a more extensive study do the same for every city of more than 25,000 inhabitants in

your state. Data may be obtained from Vol. IV, U. S. Census, 1910.

10. What specific types of education seem to be needed in your immediate community in order to achieve economic prosperity and better citizenship and social life for the masses of the people?
11. Study the methods of surveys of industries made in Minneapolis, Cleveland, Richmond, and New Orleans, and then endeavor to draw up a plan of study of industries from the educational viewpoint, suitable for your own city.
12. What is the law regarding child labor in your state? How is it enforced in your own community?
13. Sum up reasons why boys and girls might advantageously be kept out of industry at least until 18 years of age.
14. Plan and execute a scientific study of the amount, causes, and results of elimination and remedies therefor, as concern a school, or a system.
15. Make an age-grade-progress study of a school, classifying the children into nine groups. Do this by securing school records of age, and terms in school for each pupil. Have the older pupils describe accurately in a composition their uses of time out of school with reference to (a) work, (b) play, (c) sleep. Tabulate the data in the compositions and relate to each of the nine groups.
16. By means of a blank form obtain the following information from parents of pupils over thirteen years of age who are in elementary and in high schools. Occupational preference of parent for son or daughter? Occupational preference of the pupil? What training has been obtained for the preferred occupation? What other school is it desired that the pupil enter, if any?
17. From night school pupils obtain data concerning (a) present occupations, (b) past jobs, (c) ambition. Endeavor to tabulate this information for practical use.

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CHAPTER IV

SOCIAL PROBLEMS IN RELATION TO VOCATIONAL EDUCATION

Arguments for Vocational Education: Unwise expectations; twelve reasons stated; other results desired.

Dangers in Vocational Education: Claim appraisals due; Bawden's defense; biological adaptation essential.

Definite Rewards of Vocational Education: The highest compensation; the money-values of education; poverty and education.

Literacy Needed as Well as Skill: Elementary education indispensable; the tide of immigration; Talbot's conclusions.

Crime and Vocational Education: Virtue and knowledge; education for juvenile unfortunates; typical modern institutions; the Fellenberg movement.

Rehabilitation of the Disabled: Vocational education of industrial cripples; rehabilitation of disabled soldiers; rehabilitation in the United States.

Social Pedagogy: Pestalozzi; Giddings.

Summary. Problems. Selected References.

Arguments for Vocational Education

Unwise expectations. The benefits to society of that phase of education called vocational demonstrably are numerous and important. However, some of the benefits attributed to specialized training for useful occupation evidently can be obtained from many other phases of education. This observation is a valid criticism of the arguments brought forward by extremists who see in specific vocational education an absolute remedy for evils such as poverty, ignorance, and crime.

Twelve reasons stated. That vocational education lower than college grade is expected to meet beneficially economic and social needs is evinced by the statements set forth by its ad-

vocates. We present below the substance of twelve propositions formulated by the Federal Commission on National Aid to Vocational Education in its formal report to Congress shortly before the passage of the Smith-Hughes Act by that body. These propositions were presented as arguments to show economic, social, and educational needs for vocational education, and the advisability of national support. They were written it is to be remembered, before the World War, and although open in part to the criticism referred to above, nevertheless contain sound reasons for the strong support of vocational education below college grade. The thoughtful student will note whatever the strength of the arguments may prove to be, that (a) there is a difference between the matter of *need* for vocational education, and the matter of *advisability* of federal support; and that (b) there is considerable overlapping or duplication in the twelve reasons as set forth below in condensed form:(11)

1. Vocational Training is Required to Conserve and Develop our Natural Resources.—As the asset of natural resources lessens or falls in the scale, the asset of human labor rises in importance. American agriculture has prospered in the past because it rested upon the basis of the richest soil in the world—a fertility which, with the usual prodigality of this people, has been treated as if it were inexhaustible. This favorable condition itself has delayed for a century too long in the United States the coöperation of the National Government with the States in the systematic training of the American farmer. Only thoroughgoing agricultural education, making the farmer an intelligent user of the natural wealth with which Providence has blessed us as a people, can restore and preserve our boasted agricultural supremacy. . . .

The American manufacturer has prospered in the past because of four factors:

(1) The abundance and cheapness of raw material.
(2) The inventive genius of this people.

(3) Organizing ability leading to production on a large scale.

(4) A great body of cheap foreign labor of the first generation working its way upward in our midst to civic and industrial worth.

With the opening of new sources of supply in foreign countries, and with the gradual depletion of our own virgin resources in many lines, our advantage from an abundance and cheapness of raw material, at least so far as regards commercial competition, is a decreasing one. We can not continue to draw indefinitely on Europe for cheap labor, nor will cheap labor in the immediate future meet the urgent need in American industry for the more intelligent service necessary if we are to satisfy the rising demand for a better product from our domestic as well as our foreign markets. In the proportion that our resource factor fails we must increase the efficiency of human labor in the shop as well as on the farm.

The conservation and full utilization of our natural resources can be accomplished only in proportion as we train those who handle them. Public discussion and legislative fiat must be supplemented by an agricultural education which will teach the farmer how to make the soil yield an abundance and at the same time leave it rejuvenated, and by an industrial education which will teach our workers in shops and factories how to use material without waste, and how to turn the products of our forests and our mines into articles of higher and still higher value.

2. Vocational Training is Needed to Prevent Waste of Human Labor.—The greatest treasure which this country holds to-day is the undeveloped skill and vocational possibilities, not only of the millions of our workers everywhere, but of the great army of our school children, hundreds of thousands of whom pass annually from the doors of our elementary schools to serve in the shop, the field, and the office. So far we have given but little attention to the conservation of our human resources.

Vocational education will reduce to a minimum the waste of labor power, the most destructive form of extravagance of which a people can be guilty.

In any community there are always to be found three characteristic forms of waste labor power:

(1) The army of the unemployed or the involuntarily idle.

(2) The imperfectly employed or the untrained.

(3) The improperly employed, the acquisitively rather than the productively employed. . . .

3. Vocational Training is Needed to Provide a Supplement to Apprenticeship.—The American industrial worker, with all his native qualities, is relatively speaking, becoming more unskilled. Since the schools have as yet assumed no responsibility for those who go to work, the youth must get the rest of his education in an industrial organization, which no longer is able or willing to train its own workers. Large-scale production, extreme division of labor, and the all-conquering march of the machine, have practically driven out the apprenticeship system through which, in a simpler age, young helpers were taught not simply the technique of some single process but the "arts and mysteries of a craft." The journeyman and artisan have given way to an army of machine workers, performing over and over one small process at one machine, turning out one small part of the finished article, and knowing nothing about the business beyond their narrow and limited task. The age of science and invention has brought in its wake a great body of knowledge, related to the work of the mechanic, and necessary to his highest success, which the shop can not give without the help of the schools.

In the skilled callings the young worker seldom gets the breadth of experience or the information which he must have in order to realize himself, and he must, under present conditions, remain on a relatively low level of skill. Most of those who leave school at the age of 14, finding the doors of the skilled occupations closed to them, tend to enter all sorts of low grade skilled and unskilled industries, affording little or no opportunity for better wages or for promotion to a desirable life work. In the absence of a system of education which will follow them to these tasks, and, by continued training, show them a way to efficiency and happiness, the time which most of these children spend in the factory is unprofitable, both to themselves and to society. The few adolescents who rise to success as wage earners, whether by accident, rule of thumb, or sheer force of native qualities, acquire their skill and insight in ways that are wasteful to them and to business.

4. Vocational Training is Needed to Increase Wage-earning Power.—The practical training of workmen in any pursuit brings both immediate and lasting economic returns in increased production and wage-earning capacity.

5. Vocational Training is Needed to Meet the Increasing Demand for Trained Workmen.—With the constantly increasing demand upon our industries for more and better goods, the supply of trained workers is, relatively at least, diminishing.

6. Vocational Training is Needed to Offset the Increased Cost of Living.—With a farming area practically stationary, a rapidly increasing population, and an agricultural class whose ability with present methods to meet the demands for larger production is relatively diminishing, our national appetite has outgrown both our national larder and our national pocketbook. Population tends to press upon subsistence. . . .

7. Vocational Education is a Wise Business Investment.—In the last analysis expenditure of money for vocational education is a wise business investment which will yield larger returns, not only in educational and social betterment but in money itself, than a similar amount spent for almost any other purpose. The Commission recognizes that boys and girls can not be valued in terms of dollars and cents, save as these represent returns in social well-being both to themselves and to society. The financial argument below is offered from that standpoint alone.

There are more than 25,000,000 persons 18 years of age and over in this country engaged in farming, mining, manufacturing and mechanical pursuits, trade and transportation.

If we assume that a system of vocational education, pursued through the years of the past, would have increased the wage-earning capacity of each of these to the extent of 10 cents a day, this would make an increase in wages for the group of $2,500,000 a day, or $750,000,000 a year, with all that this would mean to the wealth and life of the nartion. This is a very modest estimate, and while no complete figures are available it is probably much nearer 25 cents a day, which would make a total increase in wages of $6,250,000 per day and $1,875,000,000 per year. . . .

Let us assume further that the expectancy of life ahead of youths at

18 is only 30 years. An increase of 10 cents a day in wage-earning capacity would on this assumption amount to $30 a year, or $900 in 30 years, in additional wages. An outlay of $150 in training between 14 and 18 years of age would thus be made to yield a return six times as great. In five years the increase in wages would cover the total cost of vocational training for each worker. If the increase in wage-earning capacity were 25 cents a day, the increase in the wage return in one year would be $75 and in 30 years $2,250, an amount 15 times as great as the original outlay. On this assumption the increased wage-earning power could repay the cost of instruction for each worker in two years.

8. Our National Prosperity is at Stake.—We have become a great industrial as well as a great agricultural nation. Each year shows a less percentage of our people on the farms and a greater in the cities. . . .

9. Vocational Training is Needed to Democratize the Education of the Country:

(a) *By recognizing different tastes and abilities and by giving an equal opportunity to all to prepare for their life work.* . . .

(b) *By extending education through part-time and evening instruction to those who must go to work in the shop or on the farm.*

10. Vocational Training is Needed for Its Indirect but Positive Effect on the Aims and Methods of General Education:

(a) *By developing a better teaching process through which children who do not respond to book instruction alone may be reached and educated through learning by doing.* . . .

(b) *By introducing into our educational system the aim of utility to take its place in dignity by the side of culture, and to connect education with life by making it purposeful and useful.*

11. Industrial and Social Unrest is Due in Large Measure to a Lack of Vocational Training.—The absence of opportunity for creative work and, hence, for full self-expression is, without doubt, one of the causes of much of the present unrest. The tendency of large scale production to subdivide labor almost indefinitely and to confine a worker to one monotonous process, requiring little save purely manipulative skill, while effective so far as the material product is concerned,

is serious when measured in terms of human values. It is safe to say that industry in its highly organized form, with its intense specialization, is in the main narrowing to the individual worker, and while "hands" alone may satisfy the immediate demands of industry, the failure to recognize and provide for human progress and development is producing a restless and discontented people.

Out of this unrest comes a demand for a more practical education for those who toil, an education that will better fit them to progress in industry and enable them to rise to ranks of leadership and responsibility. Everywhere it is the opinion of those who are studying the conditions of society that the lack of practical education is one of the primary causes of social and industrial discontent. . . .

12. HIGHER STANDARDS OF LIVING ARE A DIRECT RESULT OF BETTER EDUCATION.—Better standards of living are in the main dependent upon two important factors, namely, an increased earning capacity for the great mass of our people and a better understanding of values. Vocational education aims at both. Where there is intense poverty there is little hope of developing higher standards. The one hope of increasing the family income lies in better vocational training.

It is equally true that vocational education enlarges the worker's vision and arouses within him a desire for progress. This is shown by the number of men and women who, by means of further training and education, raise themselves from the ranks of unskilled labor to take positions requiring large directive powers and responsibilities. Our only hope of progress is in helping the individual to help himself. This is at the bottom of all social uplift.(11)

Other results desired. From three types of proposed schools—the all-day industrial school, the part-time school, and the evening school, the Commission further suggested that many desirable results might be expected:(11)

First, from the *all-day industrial school*, we may expect: (a) The retention in school longer of boys and girls who now are eliminated on account of lack of interest; (b) a wiser choice by them of a vocation because of an opportunity to test ability and discover likes and dislikes; (c) greater certainty of success in a vocation because of the development of a more definite purpose in life, of an increased industrial

intelligence, of an insight into the fundamental principles of a trade, and the acquisition of sufficient skill to shorten the period of apprenticeship; (d) a greater readiness to profit by part-time or evening instruction for the sake of future advancement or promotion.

Secondly, as concerns the *part-time schools:* Nearly 4,500,000 breadwinners in this country are under 18 years of age. A majority of them left school before completing the elementary schools and are unprepared either for successful wage earning or citizenship. Formerly the schools largely abandoned the adolescent wage earner to the shop and factory, and have taken no further responsibility for his guidance or training. This is unfortunate at the age when a youth or girl most needs instruction, discipline and the direction of social and industrial interests.

Part-time instruction while perhaps only a mitigating device provides instruction for those whose education at present would be terminated by entrance to a job. The purpose of part-time schools should be twofold—(1) To increase the general intelligence of young workers and lead them to understand better their social and civic duties; (2) to increase their industrial intelligence and skill and develop capacity for advancement within a given trade where such opportunity exists, or where it does not exist, to prepare for some other skilled and remunerative work.

Thirdly, it is believed that the *evening school* is the only agency to do a large part of urgently needed work, although it may be only an imperfect and temporary agency. "So far as evening work for men, at least, is concerned, it is probable that the best immediate returns in increased economic efficiency from industrial or trade training come from instruction in the evening classes attended by adult workers" (ibid, p. 54). " The part-time school is particularly needed for working children because both physicians and social workers are agreed that the attendance upon evening schools of immature children under 16 years of age, after the strain of a long day's toil, brings in its wake far more physical injury than educational advantage" (ibid, p. 51).

Dangers in Vocational Education

Calm appraisals due. Naïve confidence in the power of a new vocational education to cure or to prevent the chief evils

of social organization should be met by calm appraisal of its real values and dangers. The arguments frequently advanced in behalf of vocational education encounter opposition more potent than the easy declaration of some critics that vocational education is only a fad. It is asserted for example that the vocational education program "is determined by an incomplete vision of the real meaning of education, and that its aims are indefensibly narrow." It is feared by some that there is a tendency to prescribe the future careers of boys and girls. An alleged insurmountable difficulty is the impossibility of adapting specific vocational education to the rapidly changing conditions of commerce and industry. The development of vocational education as a public responsibility is also opposed upon the ground of inordinate expense. Finally, both friendly and unfriendly critics fear lest the control of vocational education fall under the control of sinister or selfish interests,—a real danger if corporations, or if unions, or if private interests, or if incompetents, should ever obtain sole administrative control or influence in schools closely articulated with the processes of labor and the daily welfare of the masses of workers. Equally sinister would be selfish control of executives by political combinations, or cliques, or personal interests—a possibility against which a democratic press and people must guard zealously.

Bawden's defense. W. T. Bawden in considering some of the objections mentioned has set forth refutations of each. The accusation of narrowness of aim, is based, he says, upon the judgment of critics having in mind certain private institutions run for gain, or remediable defects in administrative machinery. Concerning prescription of future careers: "There is no issue with regard to vocational education under 14 years of age, since as Snedden points out, there is little or no serious discussion of vocational education, as direct and purposive preparation for a specific calling, which now contemplates any claim upon the years required in most states to be given to compulsory school

attendance, namely from 6 to 14 years of age. Neither has there been offered any serious proposal to curtail existing opportunities for advanced education and culture. The point that appears to be overlooked in this criticism is that, regardless of where the responsibility lies, there are thousands of young people who are not receiving the advantages of education or training of any kind." The objection of impossibility of adaptation to industrial change is met by four considerations: (a) Specific training is an asset for an individual and gives confidence even if a new calling becomes necessary; (b) the problem of vocational education will not be solved until ways and means are found to fit the individual for more than a particular "job"—and this is understood; (c) the possibility of some adjustment on the part of industry itself must be assumed; (d) to advocate a halt in the progress of vocational education because of besetting difficulties is unjustifiable in educators.(1)

Vocational education of less than college grade is expensive, admits Bawden. Says he, "It costs the public far more to educate a surgeon or a lawyer or an engineer than it does to educate a young person for one of the industrial or commercial pursuits contemplated, and yet there is no great outcry against medical or legal or engineering education because it is expensive."

Biological adaptation essential. A real danger of no little magnitude in introducing specialized vocational training, especially with emphasis upon articulating the school with the needs of industry, is neglect of biological adaptation. The demands of modern industry, and of schools, often ignore the anatomical and physiological nature of men and of women. Perfect mechanical adjustment to community or industrial demands does not necessarily imply careful regard of the natural capacities and functioning of our organisms, the product of untold centuries of adaptation to environment altogether different from modern conditions. Here arise grave questions

with regard to food, ventilation, sleep, recreation; the protection of eye and ear, and other sense organs against uses not suitable to the inherited organism; the allotment of labor as suited to age and sex and race. Peculiarly necessary to the educator who seeks both a scientific and an ethical adjustment between school and the active life of the community, is a knowledge of the facts of adolescence, as revealed by psychology, anthropology, and sociology, as well as a practical acquaintance with industrial conditions.

The Definite Rewards of Vocational Education

The highest compensation. The trend of available studies leads irresistibly to the belief that increase of vocational education generally produces superior earning power. The social significance of vocational education, however, does not rest solely upon this demonstrated result measured in money. The broadening and uplifting of human life, the help toward attainment by the individual of an ultimate aim embracing health, independence, righteousness, happiness, and altruism—that is a result not measurable either by dollars, or by chronoscopes of the laboratory.

The money-values of education. Sound elementary training in reading, writing, arithmetic, geography, history, and science, facilitates increase of earnings by the ambitious individual. The peculiar appeal of specialized vocational education is the increased power of money-getting, which promises for the individual more comfort and independence. There is available a considerable bibliography(35) of studies which seek to prove that monetary recompense and social distinctions result from education,—elementary, higher, and vocational, e. g., the studies by Charles Thwing, W. W. Smith, J. C. Jones, Florence Marshall, J. M. Dodge, A. C. Ellis. Ellis' study summarizes some of the available material in striking form.(9) Examples of the materials he summarizes are these: Chancellor Smith

shows statistically that the majority of men in high public positions in the Federal Government have been college graduates. Mr. Dodge attempted to compute the capitalized "value" of laborers, apprentices, trades school graduates and technical school graduates. He considered the money value of a worker to be that sum which at five per cent would yield an income equal to the salary or wage received. His results suggest the overwhelming advantage of technical training. Similar studies were made by the Massachusetts Commission on Industrial Education, and by tracing the records of graduates of such schools as the Beverly (Mass.) Trade School, the Baron de Hirsch Trade School, the Milwaukee School of Trades, the New York Vocational School for Boys, the Rochester Shop School, the Newark Evening Technical School, the Manhattan Trades School for Girls.

The almost invariable deduction made from such studies is that vocational training produces eventually in the individual greatly increased earning power and that such training is an antidote against that great evil of society—poverty. However, valid criticisms of the above type of statistical investigation include these observations: The problem has sometimes been approached in the spirit of one having a case to prove. In some cases the employers mentioned were exceptional. Too small groups were studied. Racial, climatic, and geographical factors are involved. The fact that persons persevere through long training with definite aim, may indicate unusual intelligence and capacity in these persons at the outset of their education. When one is preparing a brief for vocational education, such logical considerations can not be safely overlooked.

Poverty and education. The arguments that vocational education will increase the prosperity of the individual are alluring when one contemplates the evils of poverty. Poverty is more than being poor; it means "the lack of due food and lodging and clothing." The worst of it is that the blight of poverty

in a family falls heaviest upon the child. Says one radical investigator graphically:

> No more responsible for its poverty than for its birth, the helplessness and innocence of the victim add infinite horror to its suffering, for the centuries have not made tolerable the idea that the weakness or wrongdoing of its parents or others should be expiated by the suffering of the child. Poverty, the poverty of civilized man, which is everywhere coexistent with unbounded wealth and luxury, is always ugly, repellent, and terrible either to see or to experience; but when it assails the cradle it assumes its most hideous form. Underfed, or badly fed, neglected, badly housed, and improperly clad, the child of poverty is terribly handicapped at the very start; it has not an even chance to begin life with. While still in its cradle a yoke is laid upon its after years, and it is doomed either to die in infancy, or, worse still, to live and grow up puny, weak, both in body and in mind, inefficient and unfitted for the battle of life. And it is the consciousness of this, the knowledge that poverty in childhood blights the whole of life, which makes it the most appalling of all the phases of the poverty problem.(30)

Preparation for self-support is an abiding value in vocational education whether for the son of the poor or of the rich. It is a mistake, however, in emphasizing the economic significance of vocational education to ignore in any community the real causes of poverty, which are manifold. There are causative factors which only the individual can remedy, such as the absence of the plain virtues of industry, honesty, thrift; ignorance and lack of skill; drunkenness, and addiction to drugs; vice. There may be low mentality. Unavoidable conditions may operate, such as weather, seasons, enforced idleness, theft, unfair discrimination, ill health, accident, old age. Education is more potent as a preventive of poverty than as a remedy. Education for health, for self-adjustment, for skill and knowledge, is the kind of vocational education preventive of poverty. Promising indeed is the effect of wise emphasis upon this kind

of vocational training to combat by preparedness for industry, not merely the reality of poverty, but also that lifelong agony of thousands of men and women—the dread of pauperism.

Literacy Needed as Well as Skill

Elementary education indispensable. Inability to read and write is not invariably a sign of low intelligence; nevertheless the ability to read and write is a fundamental requirement of active, far-sighted citizenship. Notwithstanding the lure of higher wages and of greater production it would ruin our democracy to encourage training in mere skill of groups of workers without ability to read the papers and books of the day and without ideals. Ignorance and crude power are essentials of bolshevism.

The tide of immigration. In some progressive states before the World War a flood of illiterate, ignorant immigrants was with difficulty absorbed. More stringent immigration laws which invite the worthy, intelligent immigrant and exclude the unfit will lessen the evil. The problem, however, may become acute once more when the tide of immigration swells again. The public schools are being called upon to teach adults. The task of removing adult illiteracy is as important as specialized trade training. The immediate demands are for the elements of general education, and also for unit trades courses, and for specialized vocational work for adults, in order to facilitate adjustment to industry and to secure individual promotion. In the multiplication of evening classes and with the incoming tide of enthusiasm for highly specialized, vocational courses of the unit type, it is necessary not to overlook or slight the condition of men and women who need with skill of hand also ability to read easily our books, journals, and laws, in order to understand the habits and ideals of democracy.

Talbot's conclusions. As a result of analyses of the Census, Talbot concludes that some states wherein the proportion of

adult illiterates to literates was greatest, are now showing most rapid reduction of illiteracy, whereas some progressive states are now at a standstill with regard to the reduction of illiteracy. The United States Bureau of Education has done good work in the promotion of the movement for the removal of adult illiteracy throughout the country.

Crime and Vocational Education

Virtue and knowledge. There is hope, if we could abolish illiteracy, ignorance, and inefficiency with its resulting poverty, that evil-doing would decrease. However, the actual correlation between knowledge and virtue, education and crime, is a theme as old as Socrates.

It is necessary to draw distinctions in the matter of crime,(10) and also in the matter of the many kinds and aspects of formal education. *A political criminal* of one age may be a hero in another generation; *criminals of impulse* are often persons of excellent training; *habitual criminals* may be morons or defectives, or they may be victims of drugs. Under the laws of some states youths adjudged delinquent are so only technically. Men of education and position may be secretly monsters of iniquity. There are degrees and differences in human error, misdemeanor, felony, vice, crime, wickedness, sin. Consequently no brief generalization, such as "illiteracy", or "lack of vocational education" can suffice for an explanation of crime. We need also only to indicate how general is the concept "education", for the types of modern school are exceedingly varied and numerous.

It seems significant that hundreds of penitentiary inmates are men who never had a skilled trade. Thomas S. Mosby, former Pardon Attorney of the State of Missouri, declares:

> Nearly three-fourths of the persons found in our penitentiaries are persons unable to earn a living excepting at the most rudimentary form of labor, whose means of livelihood are limited to the most primi-

tive methods, and whose earning capacity is at the lowest possible stage. We find, therefore, the maximum of dishonesty with the minimum of earning power. In other words, men who are not especially skilled in the arts and processes of trade, and who are wholly untrained as to honorable and profitable occupations, are most likely to try to gain a living by unlawfully taking the property of others (p. 135). Only about one-fourth of our penitentiary convicts are illiterates. Three-fourths of them are incompetents (p. 138). Trade schools are cheaper than reform schools, and manual training than convict labor (p. 138). And there is not a prison warden in the United States who will not concur in the observation of John J. Fallon, of the Blackwell Island Penitentiary, that "The statement that the lack of a trade is a potent and a permanent cause of crime is borne out by all close observers of penology."(21)

Vocational education for juvenile unfortunates. Whatever may be the efficacy of specific vocational training as a help in the reformation of adult criminals, it is a generally accepted belief that vocational training is of value in the care and training of juvenile delinquents. Some of the best institutions of America maintained in relation to juvenile delinquency accept these cardinal principles:

1. The treatment of juvenile delinquents should be educational rather than punitive.
2. Physical, economic, and social factors are causative elements in delinquency.
3. Recognition of both the physical and also the psychic elements in the causation and in the cure of juvenile faults is imperative.
4. Cottage systems, rather than the "barracks" plan of housing, are more conducive to home-like atmosphere and beneficial personal influences.
5. A moderately good home is better than a good institution for a child. This principle is recognized in the Boston placing-out system.

6. Useful and interesting occupations may have therapeutic and moral values and are therefore essential in the care of juveniles.

7. In addition to the modicum of general training in elementary education juvenile delinquents should be given (a) the benefit of a *prevocational course* intended to help in the choice of a definite occupation, to disclose opportunities and to inspire to effort; (b) later, definite *training for a vocation*.

Typical modern institutions. Typical of such schools are the Lyman School for Boys, in Massachusetts, the St. Charles School for Boys, in Illinois, The Glen Mills Schools in Pennsylvania, The Children's Village in New York, and the Whittier School in California. In all of these the usefulness of occupational training is recognized and provision is made for such education in the care of unfortunate youths.(15)

The Fellenberg movement. The modern tendency to care for the education of the unfortunate through industrial training has sprung from the philanthropic spirit of Pestalozzi and his collaborator Fellenberg. Says Graves, "The poor, the defective, and the delinquent have, through vocational training, been redeemed and given a chance in life, and many children have been kept in school that would inevitably have fallen by the wayside. Public schools, special industrial schools, orphanages, institutions for the deaf and blind, reformatories, and even prisons have yielded rich harvests because of Pestalozzi's first sowing."(13) Philipp Emanuel von Fellenberg (1771–1844) belonged to a wealthy and aristocratic family of Berne, Switzerland. He believed, with Pestalozzi, that immoral and wretched economic conditions in Switzerland should be attacked by means of education. The ideas of Fellenberg took root in Switzerland, Germany, France, and England.

In the United States the Pestalozzi-Fellenberg system began to appear about 1820 to 1850. A large number of institutions

sprang up with "manual labor features in addition to literary work." The aim set forth was to enable students to earn their way, and also to secure beneficial physical exercise. Later, Carlisle, Hampton, and Tuskegee, adopted this type of training in the effort to solve specific racial questions. At the present time scores of institutions for delinquents and defectives embody something of the Fellenberg industrial-physical-intellectual training, although, Graves remarks, "without much grasp of the educational principles involved." In the year 1915 there were 112 State Industrial Schools reported to the Commissioner of Education. These schools are chiefly for boys and girls delinquent, or destitute, or both, committed by action of courts. There were also 62 state schools for the blind, 68 for the deaf, and 37 for the feeble-minded. It is unfortunate that in the minds of some persons the term "industrial education" connotes chiefly education for delinquent or defective individuals.

Rehabilitation of the Disabled

Vocational education of industrial victims. The fact that even during the World War the annual numbers of industrial casualties surpassed the casualties of war is emphasizing the problem of the industrial cripple. A large number of accidents in industrial life are trivial, but some injuries that heal quickly entail ill effects long afterward. The thousands of injured persons who lack the normal use of skeleton or skeletal muscles present serious problems to the economist, the humanitarian, and the educator. Employees' compensation laws make possible some mitigation of the effects of mutilation. Enforced installation of safety devices for factory and railroad prevent untold evils. The presentation in Congress of the bill looking toward the physical restoration and the vocational reëducation of the maimed in industry was a further step.(36) Why not lessen dependency, and pauperism, and increase self-respect and the joy of living by prolonging the useful activities of

persons handicapped in the course of productive work, it was argued.

The survey of cripples made in Cleveland, Ohio, sets an example for communities desiring to understand this problem and to install preventive as well as remedial efforts. This report shows the surprising energy of many handicapped persons who without very special help are succeeding in occupations of wide range or variety. The study gives some practical suggestions for legislation looking to the protection of the employee and the employer. The placement of cripples is becoming more difficult because of the employers' liability and workmen's compensation laws. The Cleveland report also reveals the importance of prevention of the crippled condition, by attack upon infantile paralysis and tuberculosis as well as upon industrial practices that neglect the safety of the worker.(5) Especially instructive in attacking the problems of the industrial cripple are our recent experiences with our patriot-victims of war.

Rehabilitation of disabled soldiers. Potent is the appeal to us of the returned disabled soldier. It is a mark of social progress of the age that no longer is the world content to reward the disabled soldier with a mere pension. Practically all civilized countries have provided both for the physical reconstruction and also for the vocational training and placement of disabled soldiers.(20) The record of this movement in France, Belgium, Great Britain, and Germany is particularly interesting. In Canada remarkable strides have been made in this work, under the administration of the *Department of Soldiers' Civil Reëstablishment.*(26)

Rehabilitation in the United States. We in the United States profited much by the experience of Canada in this undertaking. *Physical reconstruction* of the disabled soldier was placed under the charge of the military and naval authorities. It included medical and surgical care, functional reëducation, occupational therapy, etc. Under the Smith-Sears Act of Con-

gress *vocational training* of the formerly disabled soldier who elected such training after discharge was made an obligation of the *Federal Board for Vocational Education.* The administration of the Smith-Sears Act was an important activity of the Federal Board, in addition to its administration of the Smith-Hughes Act.(28)

Social Pedagogy

Pestalozzi. The faith of Pestalozzi in the power of the school to regenerate the individual and society, as set forth in the story of *How Gertrude Taught Her Children* has not been lost, although the years have brought changes in the crude devices he proposed. Democracy now appears as the hope of the world; the rule of kings is in disrepute. We know that Nature is not perfect and society can not exist if individuals vegetate and develop under Nature's forces, without instincts being curbed and directed by reason and ethical codes. Even the artificial environment—the industries, and homes, and schools, made by man, must be altered to the purposes of altruism and ethical idealism.

Giddings. One of our sociologists, Giddings, expresses this conviction:

> Democracy will doubtless govern crudely, and it will make grave mistakes, until, in our impatience, we shall cry: Give us back the rule of the gifted and the wise! But not by its failures, not by its mistakes alone, shall democracy at the last be judged. Nor should it be judged only by its power to lift burdens from the oppressed. Whatever their composition and whatever the impact of environing forces which they must resist, the nations will be free when intellect has mastered passion, and men are just at heart. The goal of mankind is neither a leveling of those distinctions that inhere in mind and soul, nor yet the exaltation of a ruthless superman; it is the evolution of a supermankind. And this evolution, like all the evolution of the ages through which man has groped his way, must proceed through the interaction of organism and environment. If, then, the masses of men are to be

enlightened and made just, the outward conditions to which their lives will be conformed must themselves embody justice and must nobly provoke the mind. To create such conditions is democracy's great task. To establish them throughout the earth is the goal of social evolution. For it is also genetically, as it is ideally true, that righteousness exalteth a nation.(12)

If the reader now has gained a better perspective regarding the significance of the vocational education movement as it is related to democracy, to our schools, and to crucial social problems, he may be ready to inquire, who is equal to this task? Under what definite auspices shall this movement be fostered and paid for? In the following chapter we shall endeavor to unfold some of the problems involved in answering this question.

Summary

1. Arguments showing the need for vocational education are numerous and often valid. Reasons why the state must support education in general have been formulated in Chapter I. There are urgent claims for the support of that phase of education comprising vocational training lower than college grade. It is true that some of the arguments adduced by enthusiasts for the support of industrial education would also apply forcibly to other phases of education,—e. g., physical, moral. Expectations of social benefits to accrue from vocational education of any type should be kept rational.
2. Calm appraisals of schools, curricula, methods, and results in various kinds of education are needed. Unmistakable benefits will come from vocational education imbued with American ideals, but there are dangers to be avoided. These dangers are threefold: (a) Acquisition of skill, without ethical ideals; (b) imitation of foreign systems; (c) interference with biological adaptation in the attempt to conform without question to the demands of industry.

3. Poverty as a rule is not found with knowledge and skill. Statistical returns indicate that in the long run monetary rewards follow the individual who has special education for his vocation. However, "the broadening and uplifting of human life, the help toward attainment by the individual of an ultimate aim embracing health, independence, morality, righteousness, happiness, and altruism"—these are definite rewards of vocational education measured neither by money nor by chronoscopes.
4. Adult illiteracy is a menace to our democracy and especially in states where the rate of decrease is low. In the establishment of schools for training in special skills, the need of elementary education must not be overlooked, since democracy is to be preserved by an intelligent citizenship.
5. Ignorance and superstition are associated with crime and evil. Health and well-being are coupled with knowledge and morality. Whatever may be the true statistical facts about the relation of crime and education, we rely strongly upon knowledge dominated by right ideals in the fight against evil. Crime is a variety of evil in many aspects. Prevention is a better policy than cure. In the correction of juvenile delinquents forms of industrial training have long been in use. The work of Fellenberg is still worthy of study. If the economic and social benefits desired from vocational education accrue to the masses, numerous incentives and conditions of crime will disappear.
6. The rehabilitation of the disabled, whether by accident in industry or by warfare, is a work of economic and humanitarian significance. The vocational reëducation of disabled soldiers and sailors as undertaken to-day is a unique advance upon the treatment of veterans in former times. Pensions have been found inadequate protection from exploitation and insufficient rewards for heroes. Lessons

learned in the rehabilitation of returned soldiers in the future will be of value in the rehabilitation of the disabled in industry whose annual number at present is legion,—far greater than the number of our men wounded in war. The centuries-long faith that the regulation of society must come in large measure through the instrumentality of the schools has not been lost. The great work of reconstruction after the World War for Democracy, will rest ultimately upon the schools which must train citizens, mothers, and efficient workers.

Problems

1. To what extent do the arguments of the Federal Commission on Vocational Education (pages 96 to 101) overlap? Evaluate each argument as applicable to your community.
2. Indicate points of educational hygiene important in securing better biological adaptation in your school. [See Dresslar, 8, Terman, 32, etc.]
3. Point out necessary changes in some local industrial plants if better biological adaptation of workers is to be secured. (Consider hours, processes, wages, dust, fumes, temperatures, ventilation, uses of spare time by workers.)
4. Weigh the strong and the weak points of Ellis' study of the money value of education.(9)
5. Ascertain definitely what your community and state is doing to lessen any adult illiteracy.
6. Make a report of a personal inspection and study of the uses of occupation in the care of the inmates of a public institution for delinquent, or for destitute children and youths.
7. Endeavor to trace any demonstrable relation between the status of poverty and of public education in your own community. To what extent might specialized vocational

education for trades, for agriculture, or for home making, improve conditions?

8. After reading Chamberlain's views on education and crime, what opinion do you formulate concerning the relations of (a) general and (b) specialized industrial education to crime in your own city or state?(3)
9. Trace any effect of the work of (a) Pestalozzi, (b) Froebel, and (c) Fellenberg upon secondary vocational education in this country.
10. To what extent and how shall training be given for highly specialized industrial occupations and other related callings, in industries where unskilled or specialized service is in large demand? In manufacture of cotton and woolen cloth, occupations number about 100; in shoemaking, several hundred. Similar tendencies toward "unskilled" service are noted in food-packing, tobacco, steel, printing, lumber industries, etc. Shall the public schools coöperate with employers in the supplying of such workers?
11. Draw up a working plan by which vocational homemaking courses can coöperate with homes of pupils and utilize the equipment and facilities of the home for training purposes.
12. Indicate types of homemaking courses suitable at different ages, e. g., for girls who will be wage earners when 14 to 25 years of age; for girls who will remain at home; for girls in industry.
13. Show how far the requirements of vocational agricultural education of social value are defined by the actual conditions of successful farming.
14. Distinguish between the meanings of these terms: functional reëducation, occupational therapy, vocational education. (See References 20 and 34, below.)
15. State the arguments in each case, why the state should rehabilitate (a) the disabled soldier, (b) the disabled victim of industry.

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CHAPTER V

THE AUSPICES OF VOCATIONAL EDUCATION

The Factors in Education: The question of responsibility; environment and occupation; share of the family.

Ancient and Modern Craftsmanship: Apprenticeship and gilds; the loss of precious arts; economic changes vs. apprenticeship.

Contemporary Education in Relation to the Population: Provisions for occupational training; the masses unskilled; bookish tendencies.

What Schools Should Teach Vocations: Vocational courses in public schools; public sentiment; vocational education and philanthropy; corporation and union schools.

Federal Policy toward Education: Slow development; some legislative history; veto of Buchanan; the Morrill Act; Jonathan B. Turner; significance of the Morrill Act; federal acts summarized; concerning coöperation.

Federal Expenditures for Education: Income of agricultural and mechanical colleges; total of federal grants before the World War; other federal appropriations for education; federal support of vocational education a fact.

Summary. Problems. Selected References.

The Factors in Education

The question of responsibility. We have restated in Chapter I the general reasons why democracy must support universal education, and also have presented in Chapter IV the arguments of the Federal Commission concerning the needs for vocational education lower than college grade. We are particularly concerned with the practical question: Are the responsibilities for establishing and for maintaining occupational training for the masses a direct obligation of the Federal Government, the States, and the Municipalities, or does the obligation rest upon the individual, or upon private, or social agencies?

It will furnish a background for a presentation of this problem to recall factors other than the state that from the beginning have contributed to vocational education. For this purpose we shall refer briefly to the influences of physical environment or nature, of the tribe and family, of the apprentice and gild systems, of the later operations of corporations, unions, individuals, or companies; also to the philanthropic institutions, and finally to the participation of the government in its various divisions—federal, state, and municipal. Other related factors also invite our attention—for example, the influences of the church, the theater, the press, etc., active as educational forces, but consideration of which we must omit.

Environment and occupation. Spurs to greater human skill and knowledge in order to supply the necessities of life are not all of recent appearance. Industry and invention have always been stimulated by the needs of nourishment, shelter, clothing, habitation, rest, and locomotion, and by pleasure, and curiosity. Rewards of skill and invention were in force long before the appearance of the United States Patent Office. Mason remarks that in early days a "man seized his own patent." His better spear, bow and arrow, or more ingenious fishing device, or weapon, procured him more food and made him stronger, gave him quicker perceptions, and greater dexterity of execution, taught him the superiority of mind over brute force, vanquished beasts and human enemies, and perhaps secured for him respect, obedience, a following, and fear, until grown stronger, the skilled and wise made dangerous any infringement upon his "patent" or monopoly. Encouragement and support came early to the ingenious and the strong,—to the best bow-makers, arrow-makers, basket-weavers, potters, hunters, and fighters. In primitive times as well as now "the great procession of humanity drags along, too much encumbered with many cares to acquire excellence in any one occupation."(14) (17)

All of modern industry goes back in origin to man's inevitable

reactions to his environment, the diversity of which makes possible his industrial activities in their wide range from primitive occupations to present-day organized and specialized effort. Mason classifies into six divisions the occupational activities of man as they have in all ages been influenced by environment: (1) Changing or consuming the gifts of Nature, as in the worker or gleaner, hunter, fisher; (2) changing the form of natural objects, as in manufacture and mechanical arts; (3) changing the place or position of himself, or objects, hence the traveler, the carrier, transportation; (4) accounting for and explaining things, hence the weigher, and the explorer; (5) exchanging things or the fruits of labor—as in buying and selling, commerce; (6) arts of enjoyment, as in uses of food, houses, adornment, equipage, utensils. Environment supplies raw materials and force. Some ethnologists, as well as some poets, point to environment, or Nature, as also our first great instructor teaching us through imitation, or by painful trial and error. "There were hammers, gimlets, pins, needles, saws, baskets, and sandpaper at hand when the human artisan first became an apprentice," says Mason. Mollusks produced dishes, spiders and caterpillars drew out fine threads, birds wove nests, beavers conquered floods, and even plants and trees have formed vessels and fabricated cloth. In turn, environment itself has been teachable, or responsive, for, through training, grasses have become grain, wild flowers the exquisite produce of florists, and deserts have been made to blossom. Furthermore, the duel between Nature and Man has been a factor in the survival and development of skill, knowledge, and courage. The conquests of the sea, of fire, of electricity, of poisons, of disease, are instances. The savage man overcame intractable material, and the scientist constantly improves his apparatus.(14)

Referring to sociologists who stress too strongly the notion that the human race has borrowed all of its plans and methods from Nature, the same ethnologist reminds us, "one is apt to

forget that the best of instruction has no effect on dull pupils, as every pedagogue will testify. The forms and movements of all things terrestrial were lying before the senses of animated nature for milleniums before our race arrived. How few of them aroused the apperception of the brute, and stimulated him to those never-ceasing changes which constitute the life of progress. The profound teaching of Nature fell upon those who having ears, heard not."

Necessity and the desire of progress early effected a tendency to organize and support instruction for occupation. This tendency was observed, first, in family and tribal life. For example here is an illustration of the education of a Yucatan Indian attributed to Morelet:

> When he is ten or twelve years of age, a *machete* is given him and a load, proportioned to his years, is placed upon him, and he is made to accompany his father in his excursions or his labours. He is taught to find his way in the most obscure forests through means of the faintest indications. His ear is practiced in quickly detecting the approach of wild animals, and his eye in discovering the venomous reptiles that may lie in his path. He is taught to distinguish the vines, the juices of which have the power of stupefying fishes so that they may be caught by hand, as also those that are useful for their flexibility or for furnishing water to the wayfarer. He soon comes to recognise the *Leche Maria*, the precious balm with which he can heal his wounds, and the *guaco*, which neutralises the venom of serpents. He finds out the shady dells where the cacao flourishes, and the sunny eminences where the bees deposit their honey. He learns or is taught all these things early, and then his education is complete.(17)

Share of the family. A historical sketch of the relations of the human family to education would show that it not only prepares a child for the school but it also operates powerfully along with the school.

Reigart has summed up some interesting illustrative facts in this connection: First by imitation and later by participation the child and

youth of primitive society learned the occupations of elders. Hunting, shooting, fishing, fighting, customs of the tribe, and ceremonials, the boy learned from his father and grandfather, while the elements of agriculture, of many industrial arts, and of household economy were transmitted to the girl by mother and grandmother. Dynamic was the share of woman in the development of primitive industries and of culture, which in manifold form we have inherited and amazingly developed. Opposed to Plato's theory of the communistic nurture of children, the early periods of Chinese, Roman, and Hebrew history exhibit family education as dominant. Marcus Aurelius, the Emperor, "thanked the gods that he had the satisfaction of his mother's life and company a considerable while, though she was destined to die young." Comenius, to whom some trace modern school grading, called the first six years "the mother's school." Rousseau's "real nurse" is the mother, the "real preceptor" the father. Pestalozzi in *Gertrude and Leonard* pictures the true teacher as the mother. Educational writers, as a rule, are a unit in magnifying the family and home as a factor in education, and it is an error to assume that the education by the family and home was suited peculiarly to primitive man but is utterly inadequate to-day. Whether the reader of these lines has been reared upon a farm or in the city, in the plain home of a wage-earner or in a sumptuous apartment, let him make an inventory of the useful and good things he or she learned from mother and father. Unless the reader has been a victim of exceptionally unfortunate parentage, doubtless surprise will develop from the extensive inventory of fundamental things, things of occupational value, learned at home, even under modern conditions.

The conception of state support and control of education we have grown to accept as an outgrowth of the Reformation and of reaction against corrupt ecclesiasticism. This necessary step, together with the unfavorable influences of factory, tenement, apartment house, and hotel life, as they affect the home, is threatening to throw the whole burden of education upon the public school.(24)

No well-devised system of schools or courses, be they general, liberal, or vocational in aim, ignores the function of the normal home, nor does it attempt to supplant the home. Good

reasons have been brought forward to support the doctrine that the home must actively participate in public education—a participation to be more vital than the mere "hearing of lessons" or infliction of punishment or reward for the quality of school work accomplished. Here are reasons underlying this obligation of the home, given by Reigart and others:

(1) The history of the race indicates that the family and home have furnished the essentials of occupational education, or at least the necessary attitudes and aspirations for liberalizing achievements.

(2) The school, however good, can not well overcome serious neglect in the home, and can not be a full substitute for the home.

(3) Continuity of social influence and of persons, as in the family, is lacking in the school, where the pupil passes from group to group and from teacher to teacher.

(4) Group attainment of persons of the same type or class, is a virtue in the school, whereas in the home persons of different ages and in different types of labor, work in coöperation, discharging various responsibilities, and thus develop individuality and self-reliance.(ibid)

(5) When we are puzzled about how to prevent divorcement of ethical idealism and specialized vocational training, we find that one antidote to any ill effects of exclusive attendance upon vocational classes where only skill and specialized knowledge are taught to youths and adults, can be found in a good American home, with its healthful living conditions, potent influences of personal affection, its atmosphere of goodness and sturdy patriotism. Plans for multiplication of specialized vocational courses, need to be drawn in the light of requirements and promotion of wholesome living in homes full of "old-fashioned" American spirit.

Ancient and Modern Craftsmanship

Apprenticeship and gilds. Under ancient apprenticeship at its best, the apprentice was indentured by written articles of agreement. The master was obligated to house, feed, and clothe the apprentice, as well as to teach him. He was also required to give the youth moral and religious training suitable to a boy

of immature years—i. e., he was to prepare a good craftsman and a good citizen. "Not rarely the apprentice led his master's daughter a bride to the altar, so personal was the relation of employer and employee." Scott in his historical essays declares:

The apprenticeship system, as it existed in medieval times, offered opportunity to the youth of learning all branches of his trade. The shop was small; master and apprentice often worked side by side at the same bench. The master himself worked at all processes of his handicraft, and therefore it was comparatively easy for him to teach all processes to the lad at his side. It was comparatively easy, too, for the lad to follow all the workings of his master and to imitate them. The number of apprentices being small the master could give each one a large part of his attention. Furthermore, as there were but few apprentices and journeymen, there was but little division of labor, and therefore but little of the modern tendency to keep a boy employed on one or two processes to the exclusion of all others. It was to the interest of the master that the apprentice be able to assist him at every process of the craft. To the master, too, accrued the profits of the apprentice's toil during the latter's term of service, and the more skillful the boy, the greater the gains of his employer.

In the same way the apprenticeship system favored the development of artistic ability. The long term of service, usually seven years in England, somewhat less on the Continent, gave opportunity for the acquirement of that refinement of skill so necessary to the true artist. The careful, individual attention given by the right sort of master to the apprentice enabled the latter to avoid superficiality, while his own work furnished a worthy example for the lad's imitative powers. . . .

The efficiency of the apprenticeship system was guarded by gild supervision. It may be objected that I have praised the medieval system too highly. It may be pointed out that masters sometimes ill-treated their apprentices, neglected them, and failed to instruct them properly, and that apprentices were sometimes idle, thievish, and faithless. All this is true, even of the medieval system, though most of the examples of such bad conduct come from the seventeenth and eighteenth centuries. In medieval times the danger of such bad conse-

quences was lessened by the fact that both master and apprentice were responsible to the gild. The gilds passed many ordinances to regulate their conduct, and these ordinances were enforced in the gild courts. Such supervision over conduct was far more effective when the towns were small and the actions of the gild members open to close scrutiny than when the towns had grown to cities and less was known of the private life of the gild members and their workmen.

The supervision of the gild was not confined to observation and control of conduct, but was extended to the actual work of instruction as well. Sometimes the gilds specified what the master should teach.(26)

It has been suggested that the world's golden age of artisanship is represented by the medieval gilds at their best, and that therefore these gilds might be studied profitably by industrial leaders, somewhat as literary men of to-day study the cycles of Homer, the Arthurian romances, etc. In London during the year 1422 there were listed more than 100 of these gilds—including gilds of judges, doctors, bankers, tailors, spinners, bookbinders, builders, weavers, upholsterers, poulterers, hatters, dyers, armorers, vintners, pewterers, ropers, tapestrers, haberdashers, fishmongers, and venders of cheese, corn, wood, wine, oil, soap; makers and sellers of goods in silk, wool, skin; also net makers, glovers, merchant tailors, etc.(11)

Distance in time adds illusion when we contemplate the achievements and the spirit of the gilds. Poverty, disease, child and woman labor, as well as parasitic luxury in degrees not ascertainable by us, existed along with gild systems. They who crave a revival of the spirit of the medieval gilds, e. g., as attempted in the modern arts and crafts movement, point mainly to the excellencies of the gild system now absent under our system of specialization and machine work. The gilds tended to make an aristocracy of expert workmanship, helped to foster pride in the quality of products, to label inferior work as disloyalty and to crown virtuosity in skilled workmanship.

The loss of precious arts. There are many legends about

marvelous "lost arts" which man is alleged to have known before the days of steam and gas and electric engines. President Hall, in a condensation of various materials, cites the old assertions that in art the really great masters are all dead and that no modern compares with Homer, Phidias, Raphael, and Shakespeare; that in all nations there are only about 250 to 300 distinct stories, and that even some well-known jokes are traceable back for centuries. We are told, says President Hall, such things as these:

That in Pompeii we find ground, colored, and common window glass; that the Chinese had a colorless glass which, when filled with a colorless fluid, seemed to be full of fish; that a Roman in the day of St. Paul had a glass cup which, when dashed to the pavement and dented, could be hammered into shape; that besides this malleable glass there was another specimen which, hung up by one end, would dwindle to a thread and become as flexible as wool; in Rome they made a solid bit of glass in the center of which was a colored drop which must have been poured into it, which was as large as a pea, finely mottled with shifting hues; the case of Genoa was a solid emerald, said to have been the Queen of Sheba's gift to Solomon and used by our Savior at the Last Supper, and which Napoleon brought to France; Cicero said he saw the entire Iliad written on a skin rolled to the compass of a nut shell; could this have been photography? Nero had a ring with a gem which he used as an opera glass; Bunsen tells of a signet ring from Cheops so finely engraved that the inscription is invisible except with a strong glass; Phillips knew a man who had a ring with a stone three-fourths of an inch in diameter with the naked figure of Hercules, in which with glasses you could tell every muscle and count the hairs on the eyebrows, which must have been made with a magnifying glass; the old Tyrian colors are so permanent that they flame up now when unearthed; a Cashmere shawl worth $30,000 is described, with 300 distinct hues and colors which the best dyers in Europe can hardly distinguish. When the English plundered the Summer Palace of the Emperor of China, they found wrought metal vases of many kinds far beyond European skill; the Damascus blades of the Crusaders, though not gilded, are as bright as they were eight centuries ago; there was one at

the London exhibition, "the point of which could be made to touch the hilt" and which could be put into its scabbard like a corkscrew; the London watchmakers found the best steel, not in Sheffield, but in the Punjab; the first needle made in England was by a negro in the time of Henry VIII, and when he died his art died with him; the first African travelers found a tribe in the interior who gave them better razors than they knew. Walter Scott described Richard Cœur de Lion as severing a bar of iron, whereupon Saladin took an eiderdown pillow and cut it in two with his sword, and then threw up the lightest scarf in the air and severed it before it descended; a Hindoo in Calcutta threw a handful of floss silk into the air and cut it in several pieces before it touched the ground; it was thought a triumph in the sixteenth century to have set up the obelisk in Rome on one end, yet the Egyptians quarried it and carried it 150 miles; the capital of Pompey's pillar is 100 feet high and weighs 2,000 pounds. Arago thinks that the railroad dates back to Egypt, and that the Egyptians knew steam; the Duchess of Burgundy took a necklace from a mummy and wore it to a ball in the Tuileries and everyone marveled.

The true craftsman should always have in mind the praise and blame not of the masses but of the master. This ought not to be hard when one is young and able to see the good in everything. Plant forms, wings of birds, butterflies, and hedgerows can be sources of suggestive inspiration and motives of design. Craftsmen must fight against dreary monotony in both conception and execution.(11)

It is problematic whether many valuable "lost arts" have ever been lost beyond the sagacity of man, since the vanishing of prehistoric peoples. The reasons why arts are lost are that "they either become antiquated by others higher in the scale, or because they were practised by a limited number whose secret died with them." Neither is the charge that the introduction of machinery has not lessened human toil and pain altogether convincing when we contrast the uses of train and ox-cart, steamship and galley, sewing machine and needle, steam thresher and flail, gasoline tractor and crude plow, strong-arm surgery and anesthesia. True it is, unsanitary shops

reeking with bad air and filth, long hours, unpleasant supervision, monotony, speeding-up schemes, the turning of men and women, boys and girls, into automata or slaves of machines at starvation wages—that all these possible evils of our modern factory system are not infrequent concomitants of the use of machinery instead of craftsmanship.

Snedden points out that while mass production, and attendant specialization is, or appears to be, attended by social evils, nevertheless the way is not backward towards the old order, but forward towards the correction of evils found. Long hours of labor, unhygienic surroundings, premature employment of youths, physical or nervous deformation due to excessively narrow routine—none of these represent inherent shortcomings, and all are readily subject to correction—far more so, indeed, in many cases than the economic ills resident in individualistic handicraft production as still found in China, Turkey, Russia, and other economically backward countries.(28)

Economic changes vs. apprenticeship. Some of the causes of the loss of craftsmanship with its many excellent moral and physical accompaniments are these: (a) Specialization and standardization in the manufacture of products now necessary to meet consumer's demands and competition have made imperative a concentrated attention to single processes and parts, e. g., in the manufacturing processes for automobile parts, dynamos, engines, furniture, cooperage, shoes, clothing, watches, food products. (b) Child and woman labor has been exploited by unscrupulous manufacturers, especially where there is demanded not craftsmanship and intelligence, but merely an automatized tending of machines, e. g., in cotton mills, can, cigarette, paper-box, clothing, and shoe factories. (c) Decay of apprenticeship has increased the drifting aimlessness of youth. Often the "apprentice" is not taught—he is only a helper, or a menial on low wages. Stupid monotony repels a youth, and he drifts from job to job.

Enthusiasts who have contemplated the excellencies of the apprentice and gild systems have advocated and hoped for a restoration of these systems as a solution of the problems of industrial education. Certain apprenticeship agreements may yet be found and there are coöperative agreements, as in Minneapolis and Chicago, for the part-time education of apprentices. We can not ignore, however, the still existing factors which were instrumental in breaking down apprenticeship: namely, factory systems; social gulfs between employer and employees, or at least impossibility of an employer coming into personal contact with large masses of employees; antagonisms that arise between capitalistic and employed groups; the impracticability of teaching some processes except in plants utilizing these processes. The apprenticeship and gild system is a thing of the past, and in its surviving forms is inadequate to meet the demand of present day occupations, from the standpoint of either the youth or the employer.

In Canada as well as in the United States, the decay of the apprenticeship system is observed, and the general testimony is to the effect that systematic industrial and technical education of hand workers and of foremen, exists in comparatively few places. The Royal Commission reported as follows in the year 1913:

> The system of training young men and women as apprentices, is becoming less common than formerly. In some trades it has disappeared as a system and learners are expected and required to pick up the trade as best they can. The introduction and use of machinery where hand labor was formerly employed is given as one of the chief causes for the change. In a few shops, notably the shops of the railway companies, instruction classes and systematic instruction in the shops and at machines have been provided to meet the new conditions.
>
> The rapid development of the country and the growth of towns and cities, have provided the lure of relatively high wages for boys and girls

of fourteen years and younger. That attracts them to leave school early. Frequently such young people accept places and begin work for which little training is required and in which experience does not lead to the acquisition of ability or skill in a trade or occupation which affords permanent employment or is suitable for mature years. Many witnesses were of the opinion that at least part of a remedy would come through schools or courses of study which provided more hand work of a constructive kind.

A great deal of testimony was received indicating that properly organized hand-and-eye-training with constructive work, was helpful in developing the powers of children from the kindergarten classes upwards. The teachers who had experience spoke highly of its value in qualifying the children to take up bench and table work in Manual Training and Domestic Science in later years; they also testified that the hand work contributed to the progress of the pupils in what were called book studies.

Those opinions found confirmation in the practice of schools observed in other countries, notably Munich in Germany, Edinburgh in Scotland, Leeds in England, and Rochester in the State of New York. (25)

Contemporary Education in Relation to the Population

Provisions for occupational training. Since the passing of apprenticeship and of the gilds, what provisions are there for the occupational training of the ninety-nine per cent of the population who do not pass through the courses of collegiate or professional schools? How shall vocational education lower than college be supported, in behalf of the prospective and present workers in mechanical and manufacturing industries; in agriculture, forestry, and animal husbandry; in transportation; in trade and commerce; in home-making; in domestic and personal service?

Two sets of general facts appear preliminary to further discussion of this subject: (1) The general nature of occupational activities as they are distributed among the population; (2) the

subjects actually being taken as a rule by high school pupils in America.

1. The first set of facts is obtainable in detail from the U. S. Census (Vol. IV, 1910, pages 18–27), and is set forth in Table II, page 69 and Figures I and II, pages 72 and 73, of this book. The (a) overwhelming predominance of occupations other than professional and clerical is evident; evident also are (b) marked variations in different geographical areas, (c) different occupational tendencies in the sexes, (d) changes in occupational distributions during the past thirty years.

With these general occupational distributions in mind we may again weigh the obstinate facts that less than one half of one per cent of the population are enrolled in our colleges, universities, and professional schools combined; that in all high or secondary schools there are enrolled 1.6 per cent of the population; in all elementary schools, about 20 per cent of the population. Or stating it in another way: During the year 1915, of the total school enrollment of the country, 91.3 per cent were in the elementary schools, 7.1 per cent in the high schools, and 1.8 per cent in the higher institutions. Of each 100 children who entered the elementary grades in 1906–1907 about 12 graduated from high school in 1918.

The masses unskilled. A distinction should be drawn between the evaluation of general elementary education as being (a) *fundamental to all occupations*, and (b) *sufficient for all occupations*. It is agreed that general elementary education is desirable for all occupations; it is inadequate preparation for scores of occupations.

Unless we regard the education of the elementary schools and of the first years of the high school as distinctly vocational in result, it is evident that the majority of pupils who enter public schools obtain therein no specialized vocational training whatever, while the less than the one half of one per cent of our population within colleges, universities, and professional schools

may enjoy abundant and publicly supported facilities for occupational or professional training in addition to the preliminary, general training they have already received in elementary and in high schools.

It is lamentable that more students are not enrolled in our colleges and universities, the capacity of which for producing leaders has been demonstrated in abundant measure. Doubtless moral suasion might lead greater numbers of boys and girls to persist in schools until a college training is achieved. It is known, however, that economic conditions prevent numbers from continuing,—and whatever may be the causes of relatively diminutive enrollment in higher institutions, we confront a serious fact. The picture we have drawn is of an undemocratic condition not to be rectified by lessened support of our higher institutions, but rather by thoroughly reorganizing our lower and secondary schools, and by keeping youth in school until at least sixteen years of age. The high schools are popularly referred to as the colleges of the people. The movement toward the junior high school and the senior high school, together with plans for reorganization of practically every phase of secondary education, it is to be hoped will result eventually in desirable changes.

2. The second set of facts referred to above, is obtainable from the U. S. Education Report for 1917, Vol. II, page 12. We reproduce on page 137 a table which as an exhibit of general tendency merits study. Observers of the movement for secondary education must applaud the progress made during the past ten years in the multiplication of excellent high schools and reorganizations with the aim of socializing the high school. The following table, however, shows what have been the prevailing general tendencies in the high schools throughout the country. The table should not be interpreted rashly, because (a) it represents only mass figures, for the period ended in 1915; (b) the percentages for 1915 and for preceding years are calculated

TABLE VI

STUDENTS IN CERTAIN STUDIES IN PUBLIC HIGH SCHOOLS SINCE 1890

STUDIES	1890		1895		1900		1905		1910		1915	
	Students	Per cent of total	Students	Per cent of total	Students	Per cent of total	Students	Per cent of total	Students	Per cent of total	Students	Per cent of total
Total number students in schools reporting on studies	202,963	.....	350,099	.....	530,425	.....	679,702	.....	[1] 739,143	.....	1,165,495	.....
Students in—												
Latin	70,411	34.69	153,950	43.97	262,767	50.61	341,248	50.21	362,548	49.05	434,925	37.32
Greek	6,202	3.05	10,859	3.10	14,813	2.85	10,002	1.47	5,511	.75	3,351	.29
French	11,858	5.84	22,813	6.52	40,395	7.78	62,120	9.14	73,161	9.90	102,516	8.80
German	21,338	10.51	39,901	11.40	74,408	14.33	137,661	20.25	175,083	23.69	284,294	24.39
Spanish	.....	.....	.....	.....	.....	.....	.....	.....	4,920	.67	31,743	2.39
Algebra	92,150	45.40	189,988	54.27	292,287	56.20	390,893	57.51	420,207	56.85	569,215	48.84
Geometry	43,204	21.33	88,702	25.34	142,235	27.39	191,393	28.16	228,170	30.87	309,383	26.55
Trigonometry	.....	.....	8,868	2.53	9,915	1.91	11,651	1.71	13,812	1.87	17,220	1.48
Astronomy	.....	.....	16,770	4.79	14,435	2.78	8,307	1.22	3,915	.53	3,224	.28
Physics	46,184	22.21	79,720	22.77	98,846	19.04	106,430	15.66	107,988	14.61	165,854	14.23
Chemistry	20,503	10.10	32,020	9.15	40,084	7.72	45,980	6.76	50,923	6.89	86,031	7.38
Physical geography	.....	.....	83,642	23.89	121,335	23.37	146,275	21.52	142,948	19.34	169,911	14.58
Zoology	.....	.....	.....	.....	.....	.....	.....	.....	59,253	8.02	37,456	3.21
Botany	.....	.....	.....	.....	.....	.....	.....	.....	124,380	16.83	106,520	9.14
General biology	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	80,403	6.90
Geology	.....	.....	17,488	5.00	18,743	3.61	15,914	2.34	8,538	1.16	5,558	.48
Physiology	.....	.....	104,862	29.95	142,401	27.42	149,262	21.96	113,252	15.32	110,541	9.48
Psychology	.....	.....	9,606	2.74	12,368	2.38	8,910	1.31	7,109	.96	13,626	1.17
Rhetoric	.....	.....	112,205	32.05	199,803	38.48	329,895	48.54	422,051	57.10	680,871	58.42
English literature	.....	.....	.....	.....	218,613	42.10	335,348	49.34	421,980	57.09	650,613	55.82
History	55,427	27.31	120,201	34.33	198,125	38.16	277,864	40.88	406,784	55.03	589,067	50.54
Civil government	.....	.....	.....	.....	112,465	21.66	122,186	17.97	114,965	15.55	100,736	8.64
Civics	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	82,558	7.08
Agriculture	.....	.....	.....	.....	.....	.....	.....	.....	34,418	4.66	83,573	7.17
Domestic economy	.....	.....	.....	.....	.....	.....	.....	.....	27,933	3.78	150,276	12.89
Industrial	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	9,424	.81
Manual training	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	130,155	11.17
Drawing	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	266,492	22.87
Vocal music	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	367,188	31.50
Bookkeeping	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	39,816	3.42

[1] Beginning with 1910 the percentage of students in each study is based upon the number of students in the schools reporting studies. In previous years the percentages were based upon the total number of students in the schools.

upon different bases; and (c) one cause of the conditions shown is that scientific subjects are often placed by school authorities in the upper years of the high school or in classes before attaining which thousands of pupils are *eliminated*. These statistics suggest that the trend of the high schools during the past twenty-five years has been academic as a rule, and that they have been suited especially to the needs of prospective teachers of bookish subjects and to academic students. Even science,—physics, physiology, geology, astronomy, and manual training,—and also agriculture and industrial training, have had relatively unimportant places. The science courses are taken by relatively small numbers. In publicly supported high schools of the dates indicated, overwhelmingly more students took rhetoric, algebra, Latin, English literature, and history than any other subjects. The numbers taking physics, chemistry, physiology, astronomy, are far less, and the relative percentages are lower than those of twenty years ago, a time of reputedly less science than to-day. The percentages for commercial and industrial subjects are small.

Bookish tendencies. In different localities the numbers of students taking different studies will of course vary from these central tendencies noted in the U. S. Education Report. Unless the tendencies of the last twenty-five years have been modified suddenly, one can hardly generate from these general statistics any great fear lest vocational education, particularly of the specialized, industrial type for our boys over fourteen years of age, will overrun in the near future the high schools—for the figures reveal unmistakably the academic influences that have prevailed in American high schools, so far as enrollments in subjects is concerned. The claim of the secondary school for public support can not be weighed justly except in the light of the kind of education that is being given by them to our sons and daughters. Progressive communities in many instances have already reorganized secondary schools. In the East, West,

North, and South are scores of high schools erected during the past ten years, that rise high above the country-wide averages for almost any aspect of secondary education. Students of secondary education, such as the lamented Johnston, and Lange, Claxton, Snedden, Monroe, Hollister, and Inglis have contributed successfully to train a new generation of superior teachers with better views of the responsibility of the high school toward the state and society.

It is an encouraging sign also that able commissions and committees have under way plans and recommendations for the entire reorganization of secondary education in this country,—a reorganization doubtless that will be fought at every step just as the introduction of industrial education into public education has been combated by ultraconservatives at every turn. It is a good thing that democracy flourishes under discussion, especially when discussion is tempered by a ballast of facts gained through experiment.

What Schools Should Teach Vocations?

Vocational courses in public schools. The above preliminary sketch indicates some of the problems intrinsic in supporting vocational education lower than college grade. Various economic changes and the disappearance of the protective and instructive gild and apprenticeship systems have rendered uncertain and inadequate the training of modern youth in the common occupations. These occupations, grading from well-defined trades down through specialized factory-operations demanding little previous training, to simple manual labor—if they are to be taken in hand by public schools, present pedagogical, ethical, and financial difficulties of moment. If the existing high schools are to be utilized more widely for vocational instruction of boys and youth, we are confronted by academic habits of instruction, and by the fact that the high schools as a rule minister to young girls, rather than to boys, and are manned

by women, rather than by men. During the year 1915–1916 there were in the four-year public schools of the United States 36,894 women and 25,749 men as instructors. The relative number of woman instructors in the elementary schools is far greater. In the high schools there were enrolled 743,663 girls, and 618,851 boys (U. S. Education Report 1917, vol. II, p. 520). Neither the women nor the men in academic high schools as a rule are prepared by training and contact with industries to teach boys the specialized dexterity and knowledge necessary in common skilled occupations. Shall we then erect separate, distinct, vocational schools under public control? It is to be admitted that in some instances this step is necessary in order to achieve the objects desired, although even in separate schools the individual can not be permanently separated from opportunity for general and liberal education. As we have indicated (page 38) there can not be a safe divorcement in the lifetime of an individual between general and liberal, and specialized vocational education under a democracy. Obviously, new types of teachers, new processes, and productive shops, will be needed in public high schools, if the divorcement is to be avoided.

The Illinois Educational Commission reported ten reasons why the public schools should "take on vocational courses" rather than "continue as in the past under the assumption that the vocational idea has no proper place in the educational process." These ten reasons, set forth for the adoption of the vocational plan within public schools, are in substance as follows:

1. It is vastly cheaper.
2. It enables the student to live at home where all young people of secondary age belong.
3. A single school with a variety of vocational courses is a better school than is one devoted to a single idea.
4. In the cosmopolitan school, the student develops vocational

consciousness and is trained to efficiency while maintaining true relations between the vocational and the non-vocational, the particular and the general, himself and the race, his own class and people in general.

5. To educate the children of different classes separately is to prevent that natural transfer of individuals from one profession into another which is in every way desirable from both the public and the private point of view. If the children of farmers are systematically put into schools where only agriculture is taught, many a good lawyer and many a good citizen will be spoiled to make an indifferent farmer. Boys do not necessarily inherit the father's vocation.

6. The school that offers a variety of vocational courses enables the student to "find himself" during the educational period.

7. Students educated in company with those preparing for other vocations, will go out better prepared to respect other callings, and the rights of men, and to deplore factions.

8. Schools involving a variety of interests instill into a community, as well as an individual, ambition and spirit.

9. Schools should foster vocational ideals and turn out individuals efficient in specific lines, but should be essentially non-vocational.

10. The cosmopolitan school will prevent social cleavage. "The separated agricultural school, for example, is an irresistible agent for peasantizing the American farmer."(12)

Public sentiment. Considerable weight of testimony demanding practical education lower than college grade comes from many classes of citizens—educators, manufacturers, employees, unionists, social workers, philanthropists, etc., and is recorded in the reports both of the Royal Commission on Industrial Training and Technical Education for the Canadian Parliament in 1913, a comprehensive study of conditions in many lands, and also of the Federal Commission on National Aid to Vocational Education appointed by President Woodrow Wilson in 1914. The materials of these reports, as well as of other special reports, furnished evidence of the increasing desire and need throughout the whole of North America for a better vo-

cational training for the common occupations of life as contrasted with the professions. This desire and need has been accentuated by the World War.

The Federal Commission placed stress upon the fact that, in addition to affirmative replies from certain representatives of corporations and unions, in answer to the question as to whether there was need for vocational education in the various states, 43 out of 44 state school superintendents, 320 out of 375 superintendents of cities over 10,000 inhabitants, said, by questionnaire, "national aid is necessary." The state superintendents of education gave numerous reasons for the need of national grants.

E. g., "State lines are becoming less and less distinct." "To start a belief and an interest in such education." "Our local school bonds are insufficient." "Investigations must be made to put the work on a sound and economic basis. Services of experts are needed." "People wander from State to State." "State and local funds are inadequate." "Such education is expensive but confers a benefit upon the entire nation." "Would stimulate local effort and increase local facilities." "Our State is largely rural and rural communities can hardly support schools where the bare essentials are taught." "Our dual system of schools for whites and negroes imposes a heavy cost, rendering the development of industrial and vocational education slow." "This is a young and rapidly growing State where taxes are high."(2)

Vocational education and philanthropy. At this point we note the strong financial and moral support that has been given by philanthropy and by corporations and unions to certain forms of vocational education. This support has happily mitigated conditions that characterized schools of the past. Philanthropy in vocational education has found multitudinous channels. Professional schools for theology, medicine, law, engineering, music, art, have been richly endowed. Some philanthropic industrial schools were established for general training and have added industrial training. Others began as trades

schools. Some are free, some charge nominal fees or tuition. Some are preparatory trades schools; some, night schools; some aim to turn out graduates prepared to be skilled workers. There are day schools provided, and schools that afford a home for pupils. The Twenty-fifth Annual Report of the U. S. Commissioner of Labor describes a wide range of industrial schools established through benevolence.(13)

An illustrative list of industrial schools or endowments in different parts of the country, established through benevolence, is as follows:

Young Men's Christian Association, International.
The Women's Educational and Industrial Union of Boston, Mass.
Williamson Free School of Mechanical Trades, Williams, Pa.
The Carnegie Institute of Technology, Pittsburgh, Pa.
David Ranken, Jr., School of Mechanical Trades, St. Louis, Mo.
Wentworth Institute, Boston, Mass.
Virginia Mechanics Institute, Richmond, Va.
Pratt Institute, Brooklyn, New York.
Wilmerding School of Mechanical Arts, and the Wilmerding School of Industrial Arts, San Francisco, Cal.
The Ralph Sellew Institute of St. Louis.
Clara de Hirsch Trade School for Girls, New York City.
Rochester Mechanics Institute, Rochester, New York.
Hebrew Technical School for Girls, New York City.
The Lewis Institute, Chicago, Illinois.
The Dunwoody Institute, Minneapolis, Minn.
The Isaac Delgado Central Trades School for Boys, New Orleans, La.
Tuskegee Normal and Industrial Institute (for Negroes), Tuskegee, Ala.
Hampton Normal and Agricultural Institute (for Negroes), Hampton, Va.

Corporation and trade-union schools. Schools are maintained by scores of corporations both to give academic training needed by their younger workers, and also to supplement by

trade and technical instruction the training received by apprentices in their plants. In many instances there is a survival of a type of apprenticeship. There is a tendency in some plants to keep a youth, or so-called apprentice, at one operation or one machine long after he is familiar with it, in the interest of large output. Consequently when the boy or girl finishes the term, he may know one process or operation thoroughly, but not a skilled trade in its various aspects. One bad result of this sinful practice has come home to both the employer and the employee, for we are confronted with a scarcity of well-trained workers, so that industrial enterprises have been seriously hampered. Broadminded employers have recognized that under this policy industry will produce neither skilled workers nor competent foremen, so that some commendable efforts have been made to erect real apprenticeship systems. In these it is planned that the indentured boy should receive trade training and also instruction in mathematics, mechanical drawing, elementary physics, or other subjects, to facilitate advancement in his trade. Arrangements are frequently made for attendance during a few hours per week throughout the period of indenture. In the better class of such schools, the employers pay a bonus for completion of the course, and the shop instructors inspire as well as teach, and encourage clean personal habits and right ideals of work. Some corporations coöperate with the public schools; others maintain independent schools within their own plants. The danger of exploitation of youth is ever present, and the corporation schools vary in efficiency and merit.(19)

The following railroads established schools, or classes for employees: New York Central, Santa Fe, Grand Trunk, Erie, Pennsylvania, Union Pacific, Delaware, Lackawanna and Western, Delaware and Hudson, Central Railroad of New Jersey, Chicago Great Western, Père Marquette, Southern, Big Four, etc. Among corporations which have supported apprenticeship schools are: Ford Motor Co., Detroit, Mich.; Cadillac Motor Car Co., Detroit, Mich.; Armour & Co., Chicago,

Ill.; General Electric Co., Schenectady, N. Y.; Metropolitan Life Insurance Co., New York; Western Electric Co., Chicago, Ill.; Westinghouse Electric and Manufacturing Co., East Pittsburg, Pa.; Brown & Sharpe, Providence, R. I.; International Harvester Co., Chicago, Ill.; D. E. Licher & Co., New York; Yale & Towne Manufacturing Co., Stamford, Conn.; Baldwin Locomotive Co., Philadelphia, Pa.; American Locomotive Co., Dunkirk, N. Y.; Lakeside Press, Chicago, Ill.; Cincinnati Milling Machine Co., etc. Department stores and similar corporations have made marked progress in the establishment of vocational schools or classes of various types, e. g., Jordan Marsh Co., Boston, Mass.; Sears-Roebuck Co., Chicago, Ill.; William Filene, Boston, Mass.; John Wanamaker, New York; Lord & Taylor, New York; Broadway Store, Los Angeles; Emporium, San Francisco, Cal; Halle Bros. Co., Cleveland, Ohio; L. S. Ayres, Indianapolis, Ind. Telephone companies have also developed service instruction, e. g., the New York Telephone Co., and the Chicago Telephone Co.

In Chicago, Minneapolis, and other cities labor unions have from time to time entered into agreements with both philanthropic and public schools to supplement the training of apprentices. Unions also support a few trade schools. A notable example is the training afforded by the International Typographical Union Commission on Supplemental Trade Education.

Federal Policy toward Education

Slow development. The policy of the Federal Government toward education in general has been a matter of slow development. The Government at first merely aided and encouraged the States by granting endowments to the States, unevenly distributed grants of land or money. The land grant policy was begun in the days when land was about all the government had to give, the money grants representing a much later development. Vast wealth in lands which might have been retained for the support of public education was grievously dissipated in some States. From the original proposal of Colonel

Pickering in April, 1783, to the passage of the Smith-Hughes Act by Congress in April, 1917,—there is a history of increasing national aid and participation in education. The details of this history are found in the *Congressional Globe*, in the *Congressional Record*, in *American State Papers, Public Lands*, in *Poore's Federal and State Constitutions*, in *Congressional Documents*, etc., and in abbreviated form, illustrative material is available in the studies of Kandel,(16) and of Cubberley and Elliott.(5)

Some legislative history. Early in the history of our country there came to Congress a stream of requests, petitions, and memorials asking for grants of land and money for educational or for charitable purposes. President Pierce vetoed a bill granting aid to States for a hospital for insane, and during the debate on Senator Morrill's first bill asking for aid to agricultural and mechanical education, Senator Pugh quoted with approval this veto, urging that if Congress could aid agricultural education it could assist every species of education and in time would encroach upon the whole field. Senators Mason, Jefferson Davis, and Clay supported him in the contention that the bill was opposed to the reserved rights and true interests of the states.

Some contemporary disputants of vocational education *pro and con* speak as though the reasons set forth by them were new discoveries, peculiar to these present times. It is interesting at this point to note the trend of arguments offered by Mr. Morrill before Congress in the year 1858.

Mr. Morrill began his address by reminding the House of the literal bombardment of petitions it had undergone on this subject from "the various states, North and South," state societies, county societies, and individuals. Hardly a day had passed since the beginning of the session that had been without some petition in favor of this bill. Congress had legislated for all other classes of the community; it had protected authors by means of copyright laws, it had given encourage-

ment to inventors by patent legislation, and so on through a long enumeration of interests whose welfare had been considered. "All direct encouragement to agriculture has been rigidly withheld," but "when commerce comes to our doors, gay in its attire and lavish in its promises, we 'hand and deliver' at once our gold. When manufacturer appears, with a needy and downcast look, we tender, at worst, a 'compromise.'"

Federal aid in favor of agriculture, Mr. Morrill contended, was imperatively needed. So defective is the method of agricultural cultivation that year by year the American soil is becoming poorer, and "many foreign states support a population vastly larger per square mile than we maintain." The one way to overcome this condition, Mr. Morrill continued, was to enable each profession to educate itself. "The farmer and the mechanic require special schools and appropriate literature quite as much as any one of the so-called learned professions. . . . It is plainly an indication that education is taking a step in advance when public sentiment begins to demand that the faculties of young men shall be trained with some reference to the vocation to which they are to be devoted through life." A system of agricultural colleges would interfere in no way with the existing literary colleges.

Mr. Morrill then proceeded to outline the definite purposes that the proposed agricultural colleges would fulfil. . . .

In conclusion Mr. Morrill made an appeal to the House to "Pass this bill and we shall have done—

" Something to enable the farmer to raise two blades of grass instead of one;

Something for every owner of land;

Something for all who desire to own land;

Something for cheap scientific education;

Something for every man who loves intelligence and not ignorance;

Something to induce the father's sons and daughters to settle and cluster around the old homestead;

Something to remove the last vestige of pauperism from our land;

Something for peace, good order, and the better support of Christian churches and common schools;

Something to enable sterile railroads to pay dividends;

Something to enable the people to bear the enormous expenditure of the national government;

Something to check the passion of individuals, and of the nation, for definite territorial expansion and ultimate decrepitude;

Something to prevent the dispersion of our population, and to concentrate it around the best lands of our country—places hallowed by church spires, and mellowed by all the influences of time—where the consumer will be placed at the door of the producer and thereby

Something to obtain higher prices for all sorts of agricultural productions; and

Something to increase the loveliness of the American landscape." (16)

I. L. Kandel has dug into congressional records and brought forth a monograph of the above facts about the legislative history of federal aid for vocational education, the constitutional and educational precedents, and subsequent developments. The debates and parliamentary tactics resorted to by Messrs. Morrill, Cobb, Davis, Bell, Pugh, Rice, and others may be read now in the perspective of sixty years with keen interest and perhaps with some amusement.

Veto of Buchanan. The action of President Buchanan who vetoed the bill in 1859, granting federal aid in support of agricultural education, was accompanied by his statement of six grounds for disapproval. Repeated in abbreviated form the reasons were these:

1. The bill was financially inexpedient at the time.
2. It established a dangerous financial precedent.
3. The bill would be prejudicial to the settlement of the new States which needed above all things actual settlers occupying small portions of land.
4. The Federal Government had confessedly no constitutional power to follow it into the States and enforce the application of the fund to the intended objects. No control over the gift would remain after it had passed from the Government's hands.

5. The bill would injuriously interfere with existing colleges in the different States in many of which agriculture was taught as a science.
6. The bill was unconstitutional.(16)

Some of the dire things prophesied by President Buchanan came true after the final passage of the Morrill Act in later years, but, on the whole, the federal appropriations for agricultural and mechanical education in the States have been tremendously fruitful of good to the whole people.

Morrill Act. The unsuccessful attempt to pass the bill vetoed by President Buchanan in 1859, was soon followed by the introduction of a similar measure. This measure was passed by both houses and approved by President Abraham Lincoln on July 2, 1862. This great Act, the provisions of which were subsequently enlarged or extended by amendments, and by the Hatch Act (1887), by the Second Morrill Act (1890), by the Nelson Act (1907), and by the Agricultural-Extension Act (1914)—was for the purpose of donating public lands to the several States and Territories which may provide colleges for the benefit of agriculture and the mechanic arts. (See U. S. Statutes at Large, 37 Congress, p. 503.) It is known as the First Morrill Act, and under its provisions and amendments the agricultural and mechanical colleges in our states have multiplied and grown.

The fact that the Morrill Act is often spoken of as the predecessor of all other appropriations by the general government for education has led to considerable glorification of Senator Morrill.

Jonathan B. Turner. President James has brought to light evidence to show that the real father of the so-called Morrill Act was Jonathan B. Turner (b. 1805, d. 1898). He formulated clearly and definitely a plan for national grants for the promotion of education in agriculture and the mechanic arts, and inaugurated agitation among the citizens of Illinois which eventually made possible the passage of the bill. Definite proposi-

tions were recommended to Congress by the famous resolutions of the Legislature of Illinois in 1853 (15). There is good reason to believe that Turner and his friends selected Morrill to introduce the bill, and that Morrill managed the matter admirably.(15)

Significance of Morrill Act. The tremendous influence of the Morrill Act evidently gained impetus from currents such as the Fellenberg movement, and especially from the activities of Jonathan B. Turner, activities already under way even before the veto of President Buchanan. Henry S. Pritchett of the Carnegie Foundation claims that there is wide misconception as to what actually took place in Congress prior to the enactment of the Morrill Act of 1862. "The discussions," says he, "which led up to the passage of that Act are buried in numerous volumes of the *Congressional Record* and are not accessible to the public. A brief exhibit of this discussion is of high value in showing what the original intentions of Congress were, by what means the bill was enacted into law, and, most astonishing of all, the absence of any serious educational program. Congress had before it no clear, well-considered educational project. Senator Morrill himself knew very little of education. His wish was to do something for the farmer."(16)

Federal acts summarized. We have added below to the summary prepared by the U. S. Bureau of Education memoranda concerning the Smith-Hughes and the Smith-Sears Acts of Congress. These various Acts mark important steps toward federal support of various phases of vocational education.

(1) The act of July 2, 1862, granting public lands to the States, known as the "first Morrill Act," and the act of March 3, 1883, amending the previous act and providing for the investment of capital.

(2) The Act of August 30, 1890, making yearly appropriations to the States and Territories in aid of colleges of agriculture and the mechanic arts, known as the "second Morrill Act."

(3) The act of March 4, 1907, known as the "Nelson amendment,"

increasing the annual appropriation to $50,000 per year to each State and extending the conditions for the use of the funds.

In addition to the three acts supporting instructional work there have been three acts granting federal aid for experimentation and extension work:

(4) The act of March 2, 1887, the "Hatch Act," granting $15,000 to each State for agricultural experiment stations.

(5) The act of March 16, 1906, the "Adams Act," increasing the annual payment for experiment stations to $30,000 for each State.

(6) The act of May 8, 1914, the "Smith-Lever Act," making an annual appropriation to each State for agricultural extension work.

(7) The act of February 23, 1917, the "Smith-Hughes Act," an act to provide for the promotion of vocational education; to provide for coöperation with the States in the promotion of such education in agriculture and the trades and industries; to provide for coöperation with the States in the preparation of teachers of vocational subjects; and to appropriate money and regulate its expenditure.

(8) The act of June 27, 1918, the "Smith-Sears Act," an act to provide for vocational rehabilitation and return to civil employment of disabled persons discharged from the military or naval forces of the United States and for other purposes.

After the appointment of the Commission on Vocational Education, created by act of Congress on January 20, 1914, Congress provided still further means of aiding the agricultural colleges to extend their work. This was the "Agricultural-Extension Act" (Smith-Lever), providing coöperative agricultural extension work between the agricultural colleges in the several states receiving the benefits of the Morrill Act of 1862, and of acts supplementary thereto, and the United States Department of Agriculture. Federal appropriations began in 1914 with $480,000 or $10,000 for each state. This sum is to be increased by annual increments until a total of $4,100,000 annual appropriation is reached, to be divided by the Secretary of Agriculture among the states in the proportion that their rural populations bear to the rural population of the United States, and

each state must raise an amount equal to that from the Federal Government. Four points in this Act are to be noted: (1) The Act aids in the diffusion among the people of the United States of useful and practical information on subjects relating to agriculture and home economics. (2) The extension work is to be done in connection with colleges. (3) Instruction and practical demonstrations in agriculture and home economics, shall be given "to persons not attending or resident in said colleges in the several communities." It will be found that this provision (Act of May 8, 1914, Sec. 2) made possible a duplication of some work authorized under the Smith-Hughes Act, the benefits of which are intended only for instruction lower than college grade. (4) Coöperation is demanded between the States, the Colleges, and the United States Department of Agriculture.

Concerning coöperation. Dean Eugene Davenport, of the Illinois College of Agriculture, has made this observation:

> I am convinced that most of the irritation and difficulty and most of the absurd 'coöperation' have arisen from the Department's undertaking to solve local problems entirely outside its proper field of activity, often to the embarrassment of the stations, and with no other excuse than that it had the money and the inclination to do it, and that it is easier to secure funds by indirect than by direct taxation.(6)

Dean Davenport is of the opinion that the sphere of the United States Department of Agriculture should be "national, international, or at least interstate in operation," while "to the state institutions belongs the study of local questions."

Federal Expenditures for Education

Income of agricultural and mechanical colleges. The severe critics of the expenditures of federal money for vocational education whether in agricultural colleges under the Morrill and subsequent acts, or in secondary education under the Smith-Hughes Act, overlook three important facts which destroy some

of the force of destructive criticism. First, the proportion of income derived by the agricultural and mechanical colleges from the Federal Government is less than twelve per cent of their total income,—most of which comes from the states and from private sources. Table VII, on page 154, shows the sources of income of all agricultural and mechanical colleges for five years.

The second fact is that the total amounts appropriated by the Federal Government for the agricultural and mechanical colleges have been relatively insignificant when compared with governmental expenditures for objects other than education, or with expenditures of the American people for tobacco, or confectionery, etc. A third matter is that under the Smith-Hughes Act, the proportion of costs borne by the States is far greater than that borne by the Federal Government. The States, or local authorities, often furnish buildings, equipment, and plants in addition to sharing costs of instruction dollar for dollar with the Federal Government.

Total of federal grants before the World War. Before the appointment of the Federal Commission on National Aid to Vocational Education, the work of which culminated during 1917 in the passage of the Smith-Hughes Act, and four years before the World War, Cubberley, summing up data from various sources, attempted to set forth the grand total of national grants for education. He estimated the amounts to be as follows: total acres of land granted—149,299,775; total funds derived from land sales—$206,343,494; probable future income calculated for twenty years into the future—$725,100,000; total income from these grants—$829,520,000. (Monroe's Cycl. of Ed., Vol. IV, p. 382.) The amounts do not include federal expenditures for the training of officers for the Army and Navy, at West Point and Annapolis.

TABLE VII

Income of Agricultural and Mechanical Colleges during Five Years.(31)

Source of income	Funds for instruction and administration				
	1913	1914	1915	1916	1917
State funds:					
From endowment granted by the State	$131,415	$479,050	$104,966	$135,444	$160,766
From mill tax levy for support	3,095,341	4,010,234	3,733,316	3,842,112	6,441,533
From mill tax levy for permanent improvements	591,924	615,183	624,467	629,419	692,116
From appropriations for support	6,703,831	9,176,464	10,774,782	11,829,281	10,300,845
From appropriations for permanent improvements	3,695,249	3,716,834	2,768,576	2,833,204	3,783,702
Total State aid	14,217,760	17,997,765	18,006,107	19,269,460	21,378,962
United States funds:					
From land-grant fund of 1862	859,074	846,087	856,838	884,514	930,170
From other land-grant funds	186,551	264,111	195,239	193,573	241,840
From Morrill-Nelson funds of 1890 and 1907	2,490,000	2,500,000	2,500,000	2,500,000	2,515,171
Total Federal aid	3,535,625	3,592,198	3,552,077	3,578,087	3,687,181
College funds:					
From college endowment funds	966,204	1,151,511	1,206,672	1,444,075	1,399,607
From tuition, fees, board, and lodging [1]	2,683,960	3,059,358	3,565,771	3,741,429	6,077,868
From departmental earnings	(2)	(2)	(2)	(2)	2,970,412
From private gifts for support	(2)	(2)	(2)	(2)	312,054
From private gifts for permanent improvements and endowment	(2)	(2)	(2)	(2)	901,340
Miscellaneous	3,558,590	9,090,392	5,621,138	10,541,771	1,113,836
Total college funds	7,208,754	13,301,261	10,403,581	15,427,275	12,775,117
Total income for instruction and administration	24,962,139	34,891,224	31,961,765	38,274,822	37,841,260
FUNDS FOR EXPERIMENT STATIONS					
State funds	$1,024,455	$1,068,441	$1,129,709	$1,059,018	$1,588,883
United States funds	1,359,302	1,347,459	1,369,288	1,362,000	1,369,700
Private gifts	(3)	(3)	(3)	(3)	242,602
Experiment station earnings	(3)	(3)	(3)	(3)	1,213,216
Total funds for experiment stations	2,383,757	2,415,900	2,498,997	2,421,018	4,414,419
FUNDS FOR EXTENSION SERVICE					
State funds, Smith-Lever, and others	$722,425	$1,292,273	$1,075,005	$1,364,356	$2,325,563
United States funds	.....	.....	491,238	1,113,490	1,411,836
County, city, or association funds	(3)	(3)	(3)	(3)	696,334
Private gifts and miscellaneous	(3)	(3)	(3)	(3)	79,985
Toral for extension service	722,425	1,292,273	1,566,243	2,477,846	4,513,718
Grand total income of institutions	28,068,321	38,599,397	36,027,005	43,173,686	46,769,397

[1] Receipts from board and lodging included for the first time in 1917.
[2] Included in miscellaneous.
[3] Not reported.

Other federal appropriations for education. Since our entrance into the World War and the tremendous expenditures resulting therefrom, we do not know the expenditures apportioned by our Government for educational purposes. In addition to the grants and endowments recorded in the above table, the reader will understand that it has become the policy of the Federal Government to expend large sums for both the direct and also the indirect advancement of education. Here is a tabulation of the groups of appropriations made by the Government for the advancement of education through its various departments and bureaus, during the year immediately preceding the outbreak of the World War.(5)

TABLE VIII

APPROPRIATIONS BY THE UNITED STATES GOVERNMENT FOR THE ADVANCEMENT OF EDUCATION FOR THE FISCAL YEAR ENDING JUNE 30, 1914

(a) Department of State	$31,000.00
(b) War Department	1,246,159.97
(c) Department of Justice	41,000.00
(d) Navy Department	893,457.00
(e) Department of Interior	7,745,945.00
(f) Department of Agriculture	1,679,660.00
(g) Department of Commerce and Labor	25,640.00
(h) Library of Congress	809,375.00
(i) Smithsonian Institution	805,400.00a
(j) District of Columbia	3,163,640.00b
	$16,441,276.97

a. Includes $50,000 to be paid from the revenues of the District of Columbia.

b. One half of this amount is to be paid from the revenues of the District of Columbia.

The Federal Government also conducts vast educational enterprises concerned with direct teaching, in Alaska, Hawaii, the Philippines, Porto Rico, and Panama, and for the Indians. It aids indirect educational agencies of many kinds, such as the Smithsonian Institution, the Children's Bureau, the United States Bureau of Education. International congresses, scientific associations, expositions, commissions, etc., have received millions of dollars from the government. The United States Department of Agriculture is an institution largely educational in character. The agricultural appropriation during March, 1918, amounted to $28,000,000.

Federal support of vocational education a fact. The preceding pages have related partly to governmental aid as extended to education in general, and to agricultural and mechanical education of college grade. More specific is the inquiry concerning federal aid to vocational education lower than college grade as an important phase of public education. The figures in this chapter so far have not included the appropriations for support of vocational education made under the Smith-Hughes Act.

We have reached the stage in our national history where federal aid for vocational education of definite types is a fact. Large support has long been given to agricultural education. Occupational training for the Army, the Navy, aviation, etc., is paid for and regulated entirely by the Federal Government—as is also general education in Hawaii, the Philippines, and Alaska, and for the Indians. The vocational rehabilitation of disabled returned soldiers has been added as a national obligation to be discharged under the auspices of the Federal Government. The Smith-Hughes Act has made operative a larger measure of coöperation with the States in the establishment and maintenance of vocational education lower than college grade in agriculture, trades and industries, and home economics. However, the recognized responsibility for all education, as a rule

in America, is generally *local* not *central*. It is probable that in the future there will be an increasing development of larger federal aid and participation in education, but that in equal measure the autonomy of the States in educational organization and control will be zealously preserved by school men and citizens.

Summary

1. The problem is present continually: What phases of education can be supported most profitably by municipality, by State, or by Federal Government? The reasons why society must support universal education have already been stated in Chapter I. The distributions of money and of effort for education with reference both to the upbuilding of the mass of the people and also to the training of able leaders need to be scrutinized in order that the ideals of universal education may be followed.
2. The questions of responsibility for and support of education may be approached better by an understanding that many factors other than the school are educational sources—e. g., physical environment, the tribe, the family, the church, the theatre, the press, the crowd.
3. Many of the occupational activities of man can perhaps be traced back to his inevitable reaction to the necessities of adaptation to physical environment, e. g., food-getting, manufacture, transportation, barter and exchange, and even the uses of spare time. Environment both supplies raw materials, and is also an instructor of the human race, although ages of slow progress have proved that we can not depend very definitely upon the poetical conception of "Nature the first and great Teacher."
4. The family both in primitive and in modern life is a cardinal element in occupational and in general education. Ethical idealism, which is an indispensable accompaniment

of specialized vocational training, must have its root in wholesome family life.

5. Apprenticeship and the gilds of olden time do not exist today, although similarities to them are discovered in modern agreements for apprenticeship and in the existence of unions and corporations. Specialization of labor, competition, the factory system, the fact that employers can not know personally hundreds or thousands of employees, conflicts between capital and labor,—all these factors render futile the hope that revivals of apprenticeship at its best may solve the problems of secondary vocational education.
6. Because precious arts lost beyond recovery were probably practiced by a few, or have been replaced by better arts—as the match replaced flint and steel, and the turbine the crude water-wheel, it is problematical whether the system of individual responsibility for workmanship which produced many wonderful products has not gained an exaggerated evaluation, so far as the welfare of society is concerned. Individualistic handicraft flourishes in backward countries.
7. The decay of individualistic handicraft, apprenticeship, and the fostering gild, however, has left youth without responsible direction or support in learning skilled trades. Quantity of production is emphasized at the expense of the worker. Women and children have been exploited, machine-like operations full of monotony and danger sometimes have accompanied standardization and specialization in manufacturing; aimlessness and drifting of labor cause ultimate loss to employer and employee. These conditions are found both in the United States and in Canada.
8. More than ninety one per cent of the total school enrollment is found in the elementary schools. General, elementary

education is *fundamental* to all useful occupations; that, as given, it is *insufficient* as adequate preparation for occupations, is also true.

Seven per cent of school enrollment is in the high schools. Of high school students overwhelmingly large numbers take English literature, algebra, history, Latin, etc. Relatively small numbers have taken manual training, household economics, agriculture. Progressive tendencies are marked in many American high schools, and large results are accruing from the introduction of the junior high schools. The National Commission on Reorganization of Secondary Education of the National Education Association has offered comprehensive suggestions for better adjustment of the American high school to meet the needs of democracy.

9. That public schools may generally assume the burden of providing vocational courses, rather than invariably to allow separate vocational schools, appears established for reasons such as those set forth by the Illinois Commission. However, this cannot be wise in every locality, and where courses are to be installed in existing public schools, usually a different type of teacher, trained by contact with industry as well as with books, must be secured. Furthermore, staid, academic influences must not be permitted to obstruct or dominate through majority votes or executive inactivity, plans for substantial improvement of the community by means of the vocational classes or school.
10. The arguments for national aid to vocational education have been variously appraised, from the time of President Buchanan to the present. The need, however, of better secondary vocational education seems firmly established.
11. The fact that the state must support and control education

under democracy does not exclude philanthropy, churches, or individuals from the conduct and ownership of educational institutions. They are permitted to help, not to destroy, the ideals and efficiency of democracy. Corporations, unions, benevolent associations, notably the Young Men's Christian Association, and individuals, have shown remarkable enterprise in supplementing public education by means of apprentice, industrial, and commercial classes or schools of various types.

12. Federal policy toward the support of education in the respective states has been of slow development. Not mentioned in the Constitution, the control and support of education was left to the States, the Federal Government, however, constantly encouraging and helping the States by means of land grants and appropriations. The Government has gradually taken upon itself, directly or indirectly, great educational enterprises. The average citizen perhaps does not realize the extent of governmental activity in education, or the vast sums annually appropriated therefor by the government, even before the exceptional conditions of the World War. The federal policy reached its present culmination in the radical changes introduced by the enactment by Congress of the Smith-Hughes Law in 1917.

It is an important task for students to examine this law. The following chapter will therefore deal with the further development of federal coöperation, especially as indicated by the Smith-Hughes Act.

Problems

1. During the past ten years in your own community what different factors have been most potent in the different phases of education? Give illustrations for each general kind of education.

2. Give definite examples of how physical environment has modified the prevailing occupations of people in Alaska, Hawaii, the Philippines, California, Illinois, Louisiana, Michigan, Maine, Pennsylvania, Tennessee. Consult the Census Reports for 1910, vol. IV, and geographies.
3. Has Nature ever taught you directly? How and what? Was your method in that case of learning (a) trial and error, or (b) imitation, or (c) reasoning?
4. Show that ethical idealism obtained in family life is a necessary foundation and supplement to specialized vocational training. Consider with reference to (a) prospective workers in industry, and (b) adult workers in industry who attend night schools.
5. What steps can be taken in your community to conserve the features of the American home life at its best?
6. A well educated man has obtained his status from (a) heredity; (b) growth or time; (c) home and social environment and activities; (d) the school; (e) occupation or vocation; (f) uses of spare time. Evaluate in selected occupations the probable effects of each kind of the six groups of factors named.
7. Contrast modern and medieval forms of indenture for apprenticeship.
8. Why is it futile to rely to-day upon a revival of medieval apprenticeship to give us adequate vocational training of secondary grade?
9. Seek out in old homes, or in museums, some masterpieces of handicraft or workmanship, that are known to have been made under the old system. E. g.: Furniture, vessels, rugs, weapons, jewelry, pottery, books, clothing. Contrast carefully with quality, use, and quantity of similar productions of to-day. Look up handicraft in books about Turkey, China, Africa, Russia, or Indians.
10. Give any examples of manufactures of to-day that surpass

anything of the past,—in metals, wood, fabrics, chemicals and drugs.

11. Trace the origins of invention and the share of woman in the establishment of human industries. (See Mason.)
12. Look up the percentages of law, medical, and theological students who have academic degrees. (U. S. Education Report, 1917, vol. II.)
13. Look up the values of plants, endowments, and the cost of maintenance of professional schools in the United States.
14. Show to what extent the actual work of the elementary schools of your community contributes to vocational efficiency. Explain the distinctions between elementary education considered as (a) *fundamental* and as (b) *sufficient* for occupational fitness and citizenship.
15. Determine the proportions of the student body studying each subject, in each of the classes of the high schools of your community. Compare with the country-wide tendencies.
16. Abstract important points as related to vocational education, from the report of the Committee on Reorganization of Secondary Education, N. E. A., 1918.
17. Show, along with the power of the strengthened home, that vocational courses conducted as a rule in existing public schools rather than in separate schools, will help still further to prevent the divorcement of general, liberal, and specialized vocational phases of public education.
18. Scrutinize the arguments of the Federal Commission for National Aid to Vocational Education, with reference to their peculiar applicability to specialized vocational education.
19. Look up President Buchanan's veto of the agricultural bill of 1859. Which of his predictions have not been fulfilled? (See Cubberley and Elliott, Source Book, pp. 84–86.)

20. From the U. S. Labor Report for 1910 (Industrial Education) and Annual Reports of the Y. M. C. A., ascertain the nature and extent of the activities of the Association in vocational education.
21. Show that schools conducted by churches, or associations, or by private enterprise, may be conducted compatibly with the doctrine (Ch. I, p. 8) that the State must support and control public education.
22. What definite safeguards of different kinds should the State throw around the conduct of educational enterprises other than public institutions? E. g.: With reference to health, morals, standards, finance? Apply your conclusions to elementary, to secondary, and to professional schools not conducted by the state.
23. Should the city or state have the right to enforce medical inspection in all vocational and other schools, private and public? Explain the necessity.
24. In your own city and county what philanthropic institutions exist for vocational education? Visit, and study data from such an institution with regard to: endowment, control, organization, purposes, plant and equipment, student enrollment, ages and sex of pupils, faculty, methods, disposition of products, and results achieved for the community.
25. State any possible dangers both in corporation and also in union vocational schools.
26. Do you know of instances of private vocational schools run for gain, and in fact fraudulent?
27. Obtain data from some of the best corporation, or union schools and classes, and analyze for their excellent features and their defects.(19). Formulate some of the difficult educational problems that confront corporations in the matter of employment and of lessening the "turn over" or transiency of employees.

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CHAPTER VI

THE FURTHER DEVELOPMENT OF FEDERAL COÖPERATION

Nature and Origin of the Smith-Hughes Act: Functions and aims; origin; National Society for the Promotion of Industrial Education; its successor; predecessors of the Act; text of the Smith-Hughes Act; mandatory provisions; discretionary provisions;

Evaluation of the Smith-Hughes Act: A war measure? Criticisms: (*a*) The Carnegie Bulletin; (*b*) National Education Association; (*c*) personnel of the Board; (*d*) incoördination of government effort; (*e*) the problem of discretionary interpretation; (*f*) professional representation of education; (*g*) a new department. Merits of the Act; allotments to the States; additional obligations.

War and Progress: Accelerated development; fourteen factors in rapid development.

Summary. Problems. Selected References.

Nature and Origin of Smith-Hughes Act

Function and aims. The Act of Congress known as the Smith-Hughes Act, enabled the Federal Government to develop far its coöperation with the States in the promotion of vocational education lower than college grade. The general methods and objects or aims of the Act were summed up thus by the Federal Board:

1. The Federal Government deals with the work in the States only through an official State board created by the legislative machinery of the State.

2. The Federal Government deals with the State only in terms of standards and policies and not in terms of particular institutions or individuals. This means standards and policies rather than personalities.

3. The Federal Government deals with a State in terms of the conditions within that particular State and not in terms of the United States as a whole. This is possible through the provisions of the Act which provide for standards but do not specify such standards in terms of equipment, courses of study, or other uniform requirements for the country at large. This coöperation of the Federal Government with the States in the promotion of vocational education is based upon four fundamental ideas:

(1) That vocational education being essential to the national welfare, it is a function of the National Government to stimulate the States to undertake this new and needed form of service.
(2) That federal funds are necessary in order to equalize the burden of carrying on the work among the States.
(3) That since the Federal Government is vitally interested in the success of vocational education, it should, so to speak, purchase a degree of participation in this work.
(4) That only by creating such a relationship between the Federal and the State Governments can proper standards of educational efficiency be set up.(1b)

Origin. The Land Grant Act (called the Morrill Act) was preceded by a period of agitation. Memorials, resolutions and propaganda now almost lost sight of, found ultimate expression in the bill finally passed by Congress during 1862. Similarly, there was a ten-year period of determined agitation preceding the Smith-Highes Act. Not many of the resolutions passed by various organizations bore explicit reference to the Smith-Hughes Bill, but scores of resolutions indorsed by various organizations voiced a demand for vocational education of lower than college grade or gave direct support to the various predecessors of the Smith-Hughes Bill. In 1912 the United States Education Report contained the statement: "The press fairly teems with editorial and signed articles, which indicate an overwhelming sentiment in favor of enlarging and extending the scope of education in this country to include the training of the

great mass of our workers for wage-earning occupations of every kind." In behalf of this cause industrial, commercial, education, and social organizations gave support by either resolutions or activities. The Report lists the following among the organizations referred to:

National Education Association.
National Society for the Promotion of Industrial Education.
National Metal Trades Association.
National Association of Manufacturers.
American Federation of Labor.
National Child Labor Committee.
National Committee on Prison Labor.
American Association for Labor Legislation.
American Society for the Prevention and Study of Infant Morality.
Southern Commercial Congress.
Southern Educational Association.
General Federation of Women's Clubs.
United Textile Workers of America.
American Society of Equity.
National Farmers' Grange.
National Farmers' Congress.
Department of Superintendence, National Education Association.
International Congress of Farm Women.
American Foundrymen's Association.
National Domestic Science Association.
National Committee on Agricultural Education.
American Education and Coöperative Farmers' Union.
Chamber of Commerce of the United States of America.

The National Society for the Promotion of Industrial Education. The movement culminating in the passage of the Smith-Hughes Act had been stimulated by the propaganda of the National Society for the Promotion of Industrial Education. The Smith-Hughes Act crystallized in legal form the primary motive of the first decade of the Society's existence—"a period of propaganda to awaken this country to the need for

secondary vocational training supported by public money and maintained under public control." The National Society for the Promotion of Industrial Education was organized in 1906 in response to the recognized need for industrial education in America. Its membership and boards included industrial and commercial managers, labor leaders, educators, and public men. It conducted a vigorous propaganda by means of bulletins and by offering its facilities as a clearing house for various achievements and experiments in vocational education, and by making expert knowledge available to all who are interested in this new and complex problem. Twelve annual gatherings of business men, investigators, labor men, and educators, nourished public appreciation of the need of vocational education of certain kinds. Largely owing to the efforts of members of the National Society for the Promotion of Industrial Education, Congress authorized the appointment of the Commission on National Aid to Vocational Education. It speaks strongly for the high-power efficiency of the Society, as well as for the urgency of the cause, that a society of not more than 1700 members should have proved to be so powerful in influencing the educational legislation of a nation of one hundred millions.(10)

Its successor. On February 23, 1918, a "Committee on Future Policy" of the Society brought in a report changing the name of the National Society for the Promotion of Industrial Education to the *National Society for Vocational Education*, which report was adopted with amendments. It is not to be assumed that the activities of the groups backing both the old and the new societies have not encountered criticism. Professor Charles H. Judd of the University of Chicago wrote these comments after the February (1918) meeting:

> The change in name is significant for two reasons. First, the period of "promoting" industrial education is believed by the members of the Society to be over. With the organization of a Federal Board for Industrial Education the first aim and purpose of the Society has been

achieved. Secondly, the term "industrial education" is too narrow to describe the interests which now ask for recognition. There are commercial interests, agricultural interests, home economic interests, as well as the narrow interests of the industrial schools and of trade schools. So the name is to be changed and the scope of the Society is to be much enlarged. . . .

The present writer has repeatedly stated in the pages of this *Journal* that in his judgment any move which tends to set up in America a group of people or a group of schools which are intent on industrial education to the exclusion of general education is dangerous to democracy. . . . No such scheme is possible in this country as exists in Prussia, of a dual school system. . . . The new Society ought, in the opinion of the present writer, to put away the fundamentally wrong attitude of the old Society. Vocational education is not a thing apart. It can flourish only when it becomes a part of our national system. There is something larger than vocational education; it is American education. The new Society was perhaps wise in reconsidering its action; perhaps not. One thing is certain—it will make the mistake of its young life if it attempts a policy of separatism in education. With best wishes for wisdom to the leaders of the new organization and for the carrying forward in a more democratic way of a work which up to this time has been relatively narrow in purpose and highly restricted in its control, this *Journal* pledges its support to the new venture just in so far as the Society cultivates the most intimate relations possible between vocational education and general education.(5)

Predecessors of the Act. As in the case of the Morrill Act, before the Smith-Hughes Act there were also many abortive attempts at similar legislation. For example, there were: The Davis Bill of 1907, the Davis-Dolliver Bill of 1910, the Mckinley Bill of 1911, the Lever Bill of 1911, the Overman Bill of 1911, the Page Bill of 1912, all of which failed of passage. The Act finally passed was fathered by Senator Hoke Smith and Representative Dudley M. Hughes, both of the State of Georgia. It should be noted that it was a period of increasing war-tension at the time when the Smith-Hughes Bill was passed in an

amended form, and approved. Changes were made in the original Bill before its final passage. The Bill originally recommended by the Federal Commission (H. R. 16952, Smith-Hughes Bill) provided in Section 6 that the United States Commissioner of Education should be the executive officer of the Board, which Board was to consist of the Postmaster General, the Secretary of the Interior, the Secretary of Agriculture, the Secretary of Commerce, and the Secretary of Labor, one of its members to be elected Chairman. The Bill as amended in conference and finally passed (S. 703) provides in Section 6 that the "Commissioner of Education may make such recommendations to the Board relative to the administration of this Act as he may from time to time deem advisable." The membership or personnel of the Board was also radically modified.

Text of the Smith-Hughes Act. At this point the student should read and study each of the eighteen sections of the text of the Act.(13) This may be found in the Appendix. He may then profitably write a brief abstract containing the essential points of each section, and formulate a tentative interpretation of his own for each section of the Act. The first published bulletin of the Federal Board for Vocational Education was a statement of policies, which, it is stated, was to be regarded as preliminary and tentative, since sufficient time had not yet elapsed to permit the Federal Board to view the problems of administration from every possible angle. Bulletin I also contained the text of the Act. Subsequent experience of the Federal Board made necessary additional interpretations and formulations of policy, statements of which are contained in the Second Annual Report.(1b)

To facilitate understanding of the Act, the Board made two series of statements in order to bring out the distinctions between the (1) *mandatory* obligations imposed by the Smith-Hughes Act upon the Federal Board, upon the states, upon the

Secretary of the Treasury, upon the State Treasurers, upon State Boards, and concerning expenditure of appropriations, and (2) provisions where *discretion and judgment* are allowed to the Federal Board. The student should procure and study the original statements of policies for a full understanding of the operation of the Smith-Hughes Act.

Mandatory provisions. The mandatory provisions are, of course, included in the Act itself, although an analysis prepared by the Board was designed to make these obligations stand out clearly as affecting the Federal Board, State Boards, State Treasurers, etc.(3)

Discretionary provisions. The range of matters depending chiefly upon the discretion and judgment of the Board was wide, as will be indicated by the following memoranda of certain points referred to in the aforesaid first interpretations of the Federal Board. (Supra, pp. 20–48.) Although the interpretations were tentative, these first reactions will be of some permanent interest to the student of education.

Federal Board reserves right to judge arrangement made with each State, (p. 17, Bulletin 1); determines duration of agreement between States and the Board, (Sec. 6 of Act, and p. 18, Bulletin 1); reserves the right to inspect local institutions, but will deal only with State Boards, (p. 18, Bulletin 1); decides when funds may be withheld, (Secs. 15, 16, 17, of Act, Bulletin 1, p. 19); decides whether privately owned equipment may be utilized, (pp. 19–20, Bulletin 1); prescribes in detail the nature of the reports on finance and work of schools, to be furnished by State Boards, (pp. 20–21, Bulletin 1); devises the methods of ascertaining annually whether the States discharge their responsibility, (Sec. 5 of Act, Bulletin 1, pp. 22, 23); exercises discretion in permitting mixed classes with some pupils under 14 years of age who are "competent to do work designed for those who are 14," (Secs. 10 and 11, pp. 23–24, Bulletin 1); defines methods of prorating salaries of teachers, (Secs. 9, 10, 11, 12, Bulletin 1, pp. 24–25); defines rules for divorcement of teacher-training classes and of secondary classes using federal funds, (Bulletin 1, p. 26); advises concerning con-

trol of supervisors loaned by institutions to State, (Bulletin 1, pp. 27–28); advises against expenditure of federal money in few rather than in many schools, (Bulletin 1, p. 29); may accept different standards for colored and for white schools, (Bulletin 1, p. 30); does not approve of use of federal money for instruction designed for benefit of delinquent, dependent, incorrigible, defective, or otherwise subnormal youths or adults, (Secs. 10, 11, Bulletin 1, p. 30); advises with regard to meaning of "well-rounded courses of study," (Sec. 9 of Act, Bulletin 1, pp. 30–34); advises that States may accept one or several funds either through Legislature or the State Board, (Sec. 5 of Act, Bulletin 1, pp. 34–35); decides that federal moneys for teacher-training can only be used for separate, not for mixed classes, the full course of which must be approved, (Sec. 8 of Act, Bulletin 1, pp. 35, 36); interprets the Act to exclude payment of federal funds for the teaching of commercial subjects in all-day industrial schools, but permits the same in part-time schools. The Act also provides for research in commercial subjects, (Secs. 1, 6, 7 of Act, Bulletin 1, pp. 36, 57).

In addition to the above examples illustrative of the demands upon the discretion and judgment of the Federal Board in interpreting and administering the Smith-Hughes Act, there remain other cases in point. These cases concern special questions in agricultural education, in industrial education, and in home economics.

Evaluation of the Smith-Hughes Act

A war measure? During unprecedented times in the history of our country, less than two months before the entrance of the United States into the greater war in order to help "make the world safe for Democracy"—the Smith-Hughes Act was passed by both House and Senate, and it received the approval of President Woodrow Wilson on February 23, 1917. In times of peace this measure would have been a remarkable step toward extending national aid to the support of secondary education. In this critical year it was peculiarly an opportune movement,

because of both our demonstrated need of industrially trained men and women, and also our want of facilities for training men and women vocationally.(1)

Criticisms. Teachers and citizens need not be without knowledge or voice in the matter of future national legislation affecting education in the states. In order that the student may be aided in the attempt not only to appreciate the excellent features of the Smith-Hughes Act, but also to appraise justly its defects, we cite herewith typical contemporary criticisms (*a, b, c, d, e, f, g*).

(*a*) *The Carnegie Bulletin.* One of the severest criticisms and most pessimistic views with regard to both the Federal Commission, and the Smith-Hughes Act, is contained in a report of the Carnegie Foundation for the Advancement of Teaching, e. g.:

It is essential that such a revolutionary measure (*The Smith-Hughes Act*) be considered from all angles. The one large experiment in the provision of federal support for education, the Morrill and supplementary acts, failed for nearly four years, and the failure was due to the absence of an educational policy. Only when the States really took up the objects, and only when a general social demand arose, was success possible. However sound the theoretical arguments for vocational education may be, all the arguments adduced by the Vocational Education Commission or the supporters of the federal aid bills in behalf of federal aid could be applied with equal weight to any other department of education or social activity. The need of education, the extensiveness of the problem, the mobility of population, the need of trained teachers, and the need of a central information bureau are all reasons that could be applied equally in support of any other kind of claim on the federal treasury. Of much greater importance than the unsoundness of these claims is the absence of an educational policy underlying this type of legislation. There has been sufficient piecemeal tinkering with educational problems. Federal interference together with an attempt to patch up a small part of the whole simply perpetuates a system that is failing because there is no sound, unifying principle to vitalize the whole body of educational practice. The prob-

lem of vocational education cannot be treated in isolation; if it has any place at all, it must be made a part of the general organization. The experts have not yet arrived at any unanimity on the subject of vocational education. In fact, while the experts in general and vocational education have been discovering the very grave difficulties underlying the problem and are less able to present a policy now than they were five years ago, the federal legislators are still discussing the merits of a measure framed, in outline at least, in 1911, and going back in principle to the act of 1862. During this period a new problem has come prominently to the front involving a drastic change in the conceptions and administration of the education of adolescents. Educational surveys are only just beginning to apply real tests to present systems and to formulate the results. . . .

The Act itself presumes to settle a question that is far from being settled: it divides up the educational process; it would probably sanction the establishment of dual boards for educational control, with a federal board as a third authority supervising these; it fails to set up a successful machinery to supervise the expenditure of funds, since the members of the proposed federal board could devote only a fraction of their time and interest to the subject; it would create in each state conflicting interests between institutions, and set up agents with divided allegiance. The Act attempts to legislate for the country as a whole. But the situation with regard to agriculture and trades and industries varies so widely in the separate States that each State has a problem of its own, and legislation which might be good for one State might be wholly unsuited to another. It is true that the Act permits each state board to draw up its own plan, subject to the approval of the federal board. Such a provision might serve some purpose if all the States had reached the same educational standards, but they have not. Before any money is appropriated for industrial education by Congress, there should be a thoroughgoing study of present conditions to show the present situation and present needs. To legislate without a more thorough consideration of the whole subject than the examination by an *ex parte* commission of *ex parte* witnesses is to legislate in the dark But even such an investigation could prove only the need or otherwise of vocational education, not the advisability of federal aid. The only

genuine desire to promote educational progress, would be a bill authorizing the appropriation of a sum of money to be placed at the disposal of the Commissioner of Education for the purposes of conducting educational enquiries and collecting and distributing information. This can be done effectually by endowing the educational authority with a position of dignity and influence. What the country needs at the present moment in education is the guidance of the expert. Educational progress, especially in a country of such varied conditions as the United States, can be advanced only by experimental solutions demanded by these conditions; diversity rather than uniformity is a greater guarantee for the future. The development of the land grant colleges indicates that state generosity is not stimulated merely by a federal bounty. There are other and more pressing questions relating to the general system of education that demand attention; to these the states are addressing themselves. Vocational education will be taken up by the States as soon as educators and others can come forward with a policy.(6)

(*b*) *National Education Association.* The Department of Superintendence, National Education Association, has expressed objection to the provision of Section 5 of the Act, which makes possible the creation either of a unit or of a dual system of control within each state. The recommendation of the Department was probably aimed at Section 5 of the Act which permits a state either "*to designate or create a State Board.*" The effect of this phrase is to make possible a dual system such as existed during 1918 in the State of Wisconsin. The Department of Superintendence passed this resolution along with certain others during February, 1918:

We recommend that the Smith-Hughes law be so amended by Congress as to prevent the possibility of the creation of a dual system of education in any State. All acts appropriating money for the advancement of education in the States should place the administration in the hands of the commissioners of education and the chief school officers in the various States.(8)

(*c*) *Personnel of the Board.* It was claimed that it is futile to hold that the Secretaries of Commerce, Labor, and Agriculture would spend much time sitting with the Federal Board. The Commissioner of Education also was a busy man. Most ex-officio boards suffer from the fact that their members already have enough to do if they discharge well the duties of their chief offices. If the three Secretaries should spend all of their time with the Board, there is nothing in the qualifications demanded by the Act which would prevent in the future their being amateurs in education, yet possibly filled with the assurance of men successful in other lines of endeavor.

(*d*) *Incoördination of government effort.* The humble official rank of our United States Bureau of Education, its insufficient financial support, and its honorable and useful record, and also the overlapping of its reasonable functions by the new Children's Bureau and by other federal undertakings in education, have long made some kind of change desirable. The creation of the Federal Board for Vocational Education was followed by remarkable promptness of organization and efficiency in execution upon the part of the Board. Nevertheless, there remained lamentable lack of coördination, and a duplication, in the various educational efforts long maintained by the Federal Government—as witness the moneys and labor expended in behalf of education through the Departments of the Interior, of Commerce and Labor, and of Agriculture, and in the Army and in the Navy. We refer not to the indispensable emergency work incident to the War, but to conditions existing prior to 1914 and in 1919. That some duplication and lack of coordination is productive of waste is inevitable. There are those also who view with alarm the tendency "to run to the Federal Treasury for every need."

(*e*) *The problem of discretionary interpretation.* A danger is that future boards, or executives, may err in the exercise of discretionary powers. Discretion, in contrast to mandatory

direction, e. g., may be exercised by the Federal Board in scores of important matters. These discretionary powers we have already referred to in preceding paragraphs. Probably as much potential good as error inheres in the necessary exercise of discretion and judgment upon the part of the Federal Board.

(*f*) *Professional representation of education.* John Dewey has voiced the complaint of inadequate representation of education on the Federal Board, thus:

> At the present moment, (March, 1917) the first bill appropriating federal funds for industrial education in schools below the grade of the college of agriculture and mechanic arts has been passed by the two houses of Congress. So far as provisions for the representation of employers and employed is concerned, the act is a fair one. So far as the interest of education is concerned, the representation of educators is scandalously inadequate. As passed, the original bill, which safeguarded unified control on the part of the States which take advantage of federal financial aid has been changed so as to make a dual scheme optional with each State. I do not say these things to cast any discredit on the act. I refer to them only to indicate that the passage of the bill illustrates the whole situation in which we find ourselves. It settles no problem; it merely symbolizes the inauguration of a conflict between irreconcilably opposed educational and industrial ideals. Nothing is so necessary as that public-spirited representatives of the public educational interest, such as are gathered here tonight, shall perceive the nature of the issue and throw their weight in municipal, state and federal educational matters, upon the side of education rather than of training, on that of democratic rather than that of feudal control of industry.(2)

(*g*) *A new department.* There were persons who believed that the functions of the Federal Board, put into operation by the enterprise of Charles A. Prosser and his colleagues, might be administered safely and economically in the future by a United States Department of Education, of equal rank with the Departments of State, Interior, Agriculture, Labor, Commerce, War, Navy, etc. This Department, it was urged, con-

ceivably might administer all national funds for education under safe-guarding restrictions to help and stimulate local effort, without undertaking autocratic control interfering with the needs and the rights of States. It should not be forgotten, however, that our educational ills can not be solved merely by legislating into existence any central board or department, or by creating new, expensive jobs. Potential dangers along with potential benefits inhere in the establishment of any centralized federal authority in education, be it board or department.

A modification of the Smith-Towner bill was introduced at the opening of the special session of the Sixty-sixth Congress on May 19, 1919, by Congressman Towner of Iowa. (H. R. 7.) This excellent bill made possible the creation of an executive department in the Government, as the following excerpts show:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there is hereby created an executive department in the Government, to be called the Department of Education, with a Secretary of Education, who shall be the head thereof, to be appointed by the President, by and with the advice and consent of the Senate, and who shall receive a salary of twelve thousand dollars ($12,000) per annum, and whose tenure of office shall be the same as that of the heads of other executive departments;

SEC. 2. That there shall be in said department an Assistant Secretary of Education to be appointed by the President, who shall receive a salary of five thousand dollars ($5,000) per annum. He shall perform such duties as may be prescribed by the Secretary or required by law. There shall also be one chief clerk and such chiefs of bureaus and clerical assistants as may from time to time be authorized by Congress.

SEC. 3. That there is hereby transferred to the Department of Education the Bureau of Education, and the President is authorized and empowered in his discretion to transfer to the Department of Education such offices, bureaus, divisions, boards or branches of the Government, connected with or attached to any of the executive departments or organized independently of any department, as in his

judgment should be controlled by, or the functions of which should be exercised by, the Department of Education, and all such offices, bureaus, divisions, boards or branches of the Government so transferred by the President, or by act of Congress, shall thereafter be administered by the Department of Education, as hereinafter provided.

The bill also proposed to appropriate $500,000 for administrative purposes; and $100,000,000 to the States, to be divided as follows: Removal of illiteracy, $7,500,000; Americanization, $7,500,000; equalization of educational opportunities, $50,000,000; physical education, health education, and sanitation, $20,000,000; preparation of teachers, $15,000,000.

Merits of the Act. Waiving all questions of the origin of the Act, it appears plain that it was an achievement toward univeral education—an achievement, however, encompassed by potential dangers, which we now see more clearly than before the World War, for few men of intelligence have not attempted some mental reconstruction since the challenging events of the World War. The outcome of Prussianized civilization with its exalted system of educational efficiency has forced us to destroy some of our idols. We are chiefly concerned with conserving our education for democracy, and therefore schoolmen as a mass need be vigilant to judge and to rout any taint that appears in educational legislation. On the other hand it is not quite absurd to believe that some little of the abuse of the Smith-Hughes Act emanated from pro-German sources. It was a good thing for the enemy or his friends that our people should be deceived about any measure promising greater efficiency to us, and there was also that bubbling dissatisfaction which comes from a minority type of American citizen who will deride any governmental activity whatsoever which does not invariably accord with his own partisan politics.

The sterling merits of the Act, because of the emergency for which it was enacted and because of the general objects achieved, (p. 168) outweighed its defects and inherent dangers. During

the first two years of its existence remarkable progress was made by the Federal Board in stimulating every State of the Union to a new interest and activity with regard to secondary vocational education. During that time more than two score monographs and bulletins of direct application to the problems of vocational education were prepared and issued by the research workers of the Federal Board. State organizations were effected with amazing promptness, provisions made for teacher-training and actual courses started over all the country. By January 1, 1918, all of our 48 States accepted the Smith-Hughes Act either by specific provisions of the legislatures or by authority of the governors. The table on page 183 shows numbers of pupils enrolled in classes supported in part under the Smith-Hughes Act at the end of the second year of the Board's work.

Even enthusiasts for the Act did not assert its perfection. E. g., Director Prosser in speaking before the National Society for the Promotion of Industrial Education said in 1917: "I do not believe that the Smith-Hughes Bill is the last hour on the clock. I do not believe it strikes High Noon. I think it is only a way-mark along the road. I think that before we settle this problem we will have to assert the right of the State to take charge of the whole question of the training of its workmen and if you say that it is German autocracy, I say to you that it is possible to maintain that sort of procedure and that sort of autocracy within that splendid thing you call a Democracy."(12)

The Act is so far reaching that it of course represents some marked changes in educational policies. Bawden observes:

> As an expression of educational policy, the new Act embodied some important departures from previous legislation. It made provision for the training within the schools of a large group of our population unreached directly by the Federal Government. On the other hand, by offering instruction along vocational lines and of subcollegiate grade, it supplemented the Morrill Act, the expressed purpose of which was to

TABLE IX

STATISTICS OF VOCATIONAL SCHOOLS AND OF VOCATIONAL TEACHER-TRAINING CENTERS FOR THE YEAR ENDED JUNE 30, 1918

Type of school, center, or course, sex, class of State director or supervisor, and source of salary	United States	Region				
		North Atlantic	Southern	East Central	West Central	Pacific
	Number of schools reporting vocational courses					
Total	1,741	794	285	423	92	147
Agricultural school	600	166	200	159	45	39
Trade or industrial:						
All-day school	168	71	33	6	5	41
Evening school	299	101	125	24	12	35
Home economics:						
All-day school	200	102	24	34	25	15
Evening school	123	76	10	35	1	1
Part-time school	341	275	10	37	3	16
	Number of centers reporting teacher-training courses					
Agricultural	40	8	9	11	7	5
Trade or industrial	45	20	6	7	5	7
Home economics	60	12	13	11	12	12
	Number of pupils enrolled in vocational courses					
Total, both sexes[1]	164,186	105,016	9,476	37,145	4,669	7,880
Agricultural school	15,187	3,649	4,648	4,681	921	1,288
Trade or industrial						
All-day school	18,528	13,039	664	3,582	62	1,181
Evening school	45,985	23,196	1,694	14,931	2,295	3,869
Home economics:						
All-day school	8,333	4,186	890	1,801	753	703
Evening school	22,360	15,270	1,133	5,752	55	150
Part-time school	53,005	45,373	447	6,398	98	689
Total, male	100,760	60,825	6,119	24,307	3,262	6,247
Agricultural school	13,901	3,569	3,922	4,247	880	1,283
Trade or industrial:						
All-day school	14,645	10,639	399	2,489	62	1,056
Evening school	39,580	18,428	1,604	13,451	2,272	3,825
Home economics:						
All-day school	25	.....	25	.....	.....	.....
Evening school	4	4	.....	.....	.....	.....
Part-time school	32,605	28,185	169	4,120	48	83
Total, female	62,941	44,191	3,357	12,838	922	1,633
Agricultural	1,286	80	726	434	41	5
Trade or industrial:						
All-day school	3,883	2,400	265	1,093	.....	125
Evening school	6,708	5,071	90	1,480	23	44
Home economics:						
All-day school	8,308	4,186	865	1,801	753	703
Evening school	22,356	15,266	1,133	5,752	55	150
Part-time school	20,400	17,188	278	2,278	50	606

[1] Includes 485 pupils not classified by sex.

maintain colleges 'to teach such branches of learning as are related to agriculture and the mechanic arts . . . in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life.' On the other hand, since it contemplated a system of training in the schools, it also supplemented the Agricultural Extension Act of 1914, in which the service provided was "the giving of instruction and practical demonstrations in agriculture and home economics to persons not attending or resident in State colleges in the several communities." Since it imposed definite requirements as to the training of teachers, it also represented a material extension of authority over the purely permissive provisions of the Nelson amendment of 1907.(16)

The problem of future modification of the Act should be approached understandingly and sympathetically by teachers and by citizens. Opponents of progress in education who consistently try to block efforts at change, should not be permitted to make undue capital of the objections illustrated in the above list. Many of the defects are remediable. One explanation of the separatist attitude of some friends of vocational education is their pessimism in awakening a certain type of academic to the urgent needs of the majority of our beginning pupils, eighty or ninety per cent. of whom will never pass through a high school. Evil results conceivable under the Act might come through abuse, ignorance, or unintentional error upon the part of the Federal Board and its officers who are intrusted with the heavy responsibilities of administering the Smith-Hughes Act. However, hardly any public trust imposed by democracy carries solely possible good without potential evil. Necessary modifications of the Act, and publicity, research, the rise of intelligence and education, and pounding away to perpetuate the simple, ethical, idealism of our American fathers at its best—these are trustworthy safeguards.

Allotments to the States. As indicated in Table X allotments under the Smith-Hughes Act increase annually until

TABLE X

ANNUAL GRANTS BY THE FEDERAL GOVERNMENT FOR VOCATIONAL EDUCATION UNDER THE SMITH-HUGHES ACT APPROVED FEB. 23, 1917

Fiscal year ending June 30—	Total	Agriculture: For salaries of teachers, supervisors, and directors. (Sec. 2.)		
		Total	Allotted on basis of rural population	Additional to provide minimum allotments to States
1917–18	$1,860,000	$548.00	$500,000	$48,000
1918–19	2,512,000	784,000	750,000	34,000
1919–20	3,182,000	1,024,000	1,000,000	24,000
1920–21	3,836,000	1,268,000	1,250,000	18,000
1921–22	4,329,000	1,514,000	1,500,000	14,000
1922–23	4,823,000	1,761,000	1,750,000	11,000
1923–24	5,318,000	2,009,000	2,000,000	9,000
1924–25	6,380,000	2,534,000	2,500,000	34,000
1925–26	7,367,000	3,027,000	3,000,000	27,000
Annually thereafter	7,367,000	3,027,000	3,000,000	27,000

Fiscal year ending June 30—	Trade, home economics and industry: For salaries of teachers. (Sec. 3.) [1]		
	Total	Allotted on basis of urban population	Additional to provide allotments to States
1917–18	$566,000	$500,000	$66,000
1918–19	796,000	750,000	46,000
1919–20	1,034,000	1,000,000	34,000
1920–21	1,278,000	1,250,000	28,000
1921–22	1,525,000	1,500,000	25,000
1922–23	1,772,000	1,750,000	22,000
1923–24	2,019,000	2,000,000	19,000
1924–25	2,556,000	2,500,000	56,000
1925–26	3,050,000	3,000,000	50,000
Annually thereafter	3,050,000	3,000,000	50,000

Fiscal year ending June 30—	Teacher training: For salaries of teachers, and maintenance of teacher training. (Sec. 4.)			For Federal Board for Vocational Education (Sec. 7.)
	Total	Allotted on basis of total population	Additional to provide minimum allotments to State	
1917–18	$546,000	$500,000	$46,000	$200,000
1918–19	732,000	700,000	32,000	200,000
1919–20	924,000	900,000	24,000	200,000
1920–21	1,090,000	1,000,000	90,000	200,000
1921–22	1,090,000	1,000,000	90,000	200,000
1922–23	1,090,000	1,000,000	90,000	200,000
1923–24	1,090,000	1,000,000	90,000	200,000
1924–25	1,090,000	1,000,000	90,000	200,000
1925–26	1,090,000	1,000,000	90,000	200,000
1925–26	1,090,000	1,000,000	90,000	200,000
Annually thereafter	1,090,000	1,000,000	90,000	200,000

[1] Not over 20 per cent for salaries of teachers of home economics.

1926. Appropriations for teachers of agriculture, trade, home economics, and industrial subjects increase some 600 per cent. within that period, for teacher-training, about 200 per cent.

Additional obligations. Since the passage of the Smith-Hughes Act, Congress created another law, the execution of which brought an additional power and obligation to the Federal Board. This law is known as the Smith-Sears Act, and its purpose was to provide for the vocational rehabilitation and return to civil employment of disabled persons discharged from the military or naval forces of the United States, and for other purposes. Enlargement of the number of executives, under the control of the Federal Board, and a reorganization of its labors were made necessary. The activities of the Board therefore may be roughly classified into three groups: (1) Administration of the Smith-Hughes Act; (2) administration of the Smith-Sears Act; (3) investigations, reports,—research.

War and Progress

Accelerated development. In a biennial survey of the two years 1917 and 1918 by the Bureau of Education the statement was made that it is probably conservative to say "that the tangible results accomplished in vocational education during this period equal those of any decade preceding."

Fourteen factors in rapid development. The same review, which was written by William T. Bawden, sets forth fourteen factors of this rapid development, which we mention in abbreviated form:

(1) Culmination of campaigns for Smith-Hughes Act.

(2) Gigantic experiments in training "fighting mechanics" by the Committee on Education and Special Training of the War Department.

(3) Training of skilled workers by the Emergency Fleet Corporation of the United States Shipping Board.

(4) Plans, conferences, constructive programs, contributed

by various agencies, including: Navy Department, Department of Labor, Council of National Defense, International Young Men's Christian Association, United States Bureau of Education.

(5) Unprecedented reliance upon the machinery of popular education—a new conception of the relation between education and national achievement.

(6) Public discussion of vocational education.

(7) Scrutiny and appraisement of existing school programs.

(8) General diffusion of the idea that secondary education must be adapted for actual needs of persons of about 12 to 18 years of age, rather than only for persons who have completed certain prearranged "grades" and hence there has come new interest in junior high schools, continuation and coöperative schools, and vocational guidance.

(9) Recognition of need of preparation for teaching vocational subjects.

(10) War called attention to the fact that nothing adequate had taken place of apprenticeship.

(11) Shortcomings appeared in the failures to coördinate compulsory-education legislation, child-labor legislation, and vocational education legislation.

(12) Manual training gravitated toward actual shop and industrial work.

(13) The volume and quality of books on vocational education increased.

(14) A numerous official personnel along with the multiplication of vocational classes and schools came into existence during this period.(16)

Summary

1. The Smith-Hughes Act represented the culmination of a series of efforts for federal legislation for education. It is the most specific act of its kind passed by Congress. Its

origin is found in pressing economic and social needs, in the evolution from preceding measures of like nature, and its passage was facilitated by various propaganda.

2. The eighteen sections of the Act demand intensive, separate consideration of the student, since the administration of the Act is deeply complicated by existing customs and laws within the States.
3. Criticisms of the Act found considerable solid ground of objection, although the great merits and results of the Act demanded its support by progressive school men, even if modifications in the law ultimately were found to be necessary.
4. Interpretations and policies as promulgated by the Federal Board present inevitable difficulties of adjustment that will recur. A serious undertaking will be the exercise by the Federal Board of sane and equitable judgment or discretion concerning a wide range of issues which are left open and concerning which legal exactions are not plain.
5. The organization of the first Federal Board was satisfactory in character, and the initial steps of administration and service were undertaken with remarkable promptness and energy. The stress of war-times increased the number of problems before the Board.
6. Allotments of federal money to the States are on a progressively increasing scale until 1926, have been accepted under conditions of coöperation by all of the forty-eight States, and are a tremendous stimulus and aid to vocational education.
7. The conditions of war have brought good along with evil. One benefit derived is remarkable stimulus to vocational education other than college grade. The factors in the accelerated progress of the war period were numerous and complex and the effect will probably be permanent.

Problems

1. Make a careful abstract of each section of the Smith-Hughes Act. Make the abstract as brief as possible, consistent with clearness.
2. Make a statement naming consecutively the good points of the Smith-Hughes Act.
3. What do you consider its most serious defects?
4. Study in detail the operation, present or prospective, of the Act in your own community.
5. After you have entirely finished the study of this chapter, try to draw up a bill, which you would substitute for the Smith-Hughes Act.
6. State and compare merits of bill recommended by the Federal Commission. (vol. I, pp. 84–85, section 6), and of Smith-Hughes Act (Section 6) with reference to organization and personnel of the Federal Boards provided.
7. Sum up reasons for enlargement and better support of the United States Bureau of Education.
8. Construct a table thus: Select twelve States, North, East, West, and South; write in, the amounts of money to be appropriated to each State from the Federal Government under the Smith-Hughes Law, during the next eight years; in separate columns write the amounts respectively for payment of salaries of teachers of agriculture, of home economics, and trade and industrial subjects; for training of teachers, etc.(1)
9. What future dangers from partisan politics confront the operation of the Smith-Hughes Act, or a Department of Education, and how might such dangers be avoided?
10. Prescribe the reasonable requirements or qualifications to be demanded of persons in charge of studies, investigations, or researches authorized under Section 7 of the Act.
11. Prescribe the (a) qualifications desirable, and (b) the amount

of time to be expended for the Federal Board upon the part of appointive members of the Federal Board.

12. Show that the range of instruction, under the Smith-Hughes Act is relatively narrow in subjects allowed but extremely broad in application.
13. Why did the Federal Commission recommend omission of provisions for salaries of teachers of commercial subjects? (See Report of Federal Commission, vol. I, p. 40; also Bulletin 1(3), p. 36).
14. Ascertain to what extent coöperation is being effected between the Federal Board, the Bureau of Education, and the Departments of Agriculture, Commerce, and Labor, as provided in Section 6 of the Act.
15. From governmental reports show where duplication of efforts for education exist, and where and how better coordination can be effected.
16. Read Bawden's review, and then contrast the relative permanency and power of the fourteen factors enumerated as helping to promote sound vocational training in public education.

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CHAPTER VII

PROBLEMS IN AGRICULTURAL EDUCATION

The Fields of Instruction: A major industry; agricultural education defined; agricultural industries.

Elementary Agriculture: Growth of elementary instruction; the place of nature study; stimulating factors; school garden movement; agriculture for city boys; farm-craft lessons.

Secondary Instruction: Characteristic questions; development; high school departments; special or separate schools; courses of study.

Study and Teaching vs. Practice of Agriculture: Farming by graduates; college enrollment; theory and practice.

The Machinery for Adequate Agricultural Education: A vertical view; an outline in detail of necessary means.

Applications of the Smith-Hughes Law: Agricultural questions; duplication; payment of directors and supervisors; club work; short courses; local distribution of funds; at least dollar for dollar; teaching versus supervision; mixed classes; the training demanded.

Pedagogical Problems: Preparation of teachers; a course for teachers; technic in teaching; project method; essentials of a home-project; distribution of projects; agricultural and liberal education; agriculture as therapy.

Agricultural Education in Philanthropic and Other Institutions: Hampton and Tuskegee; the Williamson Free School of Mechanical Trades; a specimen course; agriculture for delinquents and feeble-minded; agriculture in other institutions.

The Improvement of Rural Life: City and country interested; the advocates.

Summary. Problems. Selected References.

The Fields of Instruction

A major industry.—The fact that so large a number of workers is found in the various activities of agriculture is of significance for vocational education. There are broadening and stimulating factors in agricultural arts education regard-

less of the vocation a person enters eventually. Vocational agricultural education is being taught successfully by many land grant colleges, and it is superfluous to-day to marshal arguments for the continuance of such instruction. A series of volumes could be written in order properly to present even the leading problems of agricultural education lower than college grade. We shall make no attempt in this introductory volume to cover these special fields, other than to present some significant data and questions and to indicate selected references bearing respectively upon elementary and secondary training in agriculture. The fact that the Smith-Hughes law applies to agricultural education as well as to education in industries and trades, home economics, and commerce, indicates that the Act is potentially broad in application.

Agricultural education defined. On page 49 agricultural education has been defined both as *vocational*, or direct preparation for occupations (such as those of the farmer, planter, dairyman, stock raiser, poultry keeper, bee keeper, gardener, florist, nurseryman, etc.), and also as *agricultural arts education* (designed to enhance general intelligence, to promote appreciation of agriculture as a form of economic activity, to show practical application of sciences, and to inspire vocational ideals related to agriculture, etc.)

Agricultural industries. The table on page 194 from the U. S. Census of 1910 (with an added estimate for homemakers, not included under "gainful" occupations) displays the broad scope of agricultural industries.

Elementary Agriculture

Growth of elementary instruction. Instruction in the elements of agriculture began early in European schools. The United States Bureau of Education has made available to the public interesting studies of agricultural education in Denmark, Russia, Ireland, and the Philippines.(49) In France by 1877

TABLE XI

AGRICULTURAL WORKERS IN UNITED STATES

OCCUPATION	Total	Male	Female
All (gainful) occupations in United States	38,167,336	30,091,564	8,075,772
Homemakers (estimated)	22,000,000		22,000,000
Agriculture, forestry, and animal husbandry	12,659,203	10,851,702	1,807,501
Dairy Farmers	61,816	59,240	2,576
Dairy farm laborers	35,014	32,237	2,777
Farmers	5,865,003	5,607,297	257,706
Farm laborers	5,975,057	4,460,634	1,514,423
Fisherman and oystermen	68,275	67,799	476
Gardeners, florists, fruit growers, and nurserymen	139,255	131,421	7,834
Garden, greenhouse, orchard, and nursery laborers	133,927	126,453	7,474
Lumbermen, raftsmen, and woodchoppers	161,266	161,191	77
Stockherders, drovers, and feeders	62,975	62,090	885
Stock raisers	52,521	50,847	1,674
All others in this division	104,092	92,493	11,599

every normal school and in 1882 every rural primary school was required to give place for the study of elementary agriculture. By 1896 the courses were revised, made definite and practical. Before the World War agriculture was taught universally in the primary schools of France. Belgium had one of the best systems of elementary agricultural instruction in Europe. In Sweden the elements of agriculture and forestry are taught in all rural schools. In Great Britain relatively little had been done before the War, but the English colonies—West Indies, Australia, Canada, provided for agricultural edu-

cation in certain grades. Germany, Austria, and Switzerland developed special agricultural schools rather than general work in agriculture in elementary schools.

The Fellenberg-Pestalozzian movement stimulated agricultural education both in Europe and in America. In America, however, numerous institutions at first embracing the idea of manual labor, early dropped this and agricultural training and became purely "literary." Little was done in the United States toward instruction in elementary agriculture before 1900, but since 1905 rapid progress has been made. By October, 1908, agriculture had been added to the list of subjects to be taught in the common schools of Alabama, Arkansas, California, Georgia, Louisiana, Maine, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, South Dakota, Texas, and Wisconsin. Agricultural colleges joined in the movement for the preparation of agricultural teachers—notably, Cornell University, the University of Illinois, Massachusetts Agricultural College, and Ohio State University, coöperating with the United States Department of Agriculture. Boys' agricultural clubs and farmers' institutes have further helped on the good cause.

During the years of the World War there were rapid developments favoring elementary instruction in agriculture in the United States. In Minnesota during 1918, school children to the number of 32,000 were enrolled in home-project gardening. In California the State Board of Education passed a regulation relative to agricultural instruction in normal schools, that students entering after June 30, 1919, one unit shall be required in manual training or household arts or both, and one unit in the elements of agriculture, including practical work in gardening, floriculture, and plant propagation. In Michigan, county normal training classes in agriculture grew to 53 in number. In Montana during 1918 a bill passed the legislature making agriculture a required subject in elementary schools. In Kansas the number of high schools giving teacher-training work in agriculture rose to 234 in number. The general assembly of North Carolina created a com-

mission to assist teachers in making agricultural work more practical. An act of the New York Legislature for 1917 provides for the employment of "directors of agriculture in cities, towns, and school districts not maintaining a school of agriculture, mechanic arts, and home making." Indiana developed plans for an "ideal organization for club work in a county."(49r)

That much of the teaching of elementary agriculture has been superficial is obvious because of the unpreparedness of teachers, lack of equipment, and the nature of the subject. A precaution to be observed is that a subject need not be introduced merely because adult farmers demand it as "useful." To open the eyes of the child to Nature is as important as to impart useful information. By all means the most valuable product of the farm is a wholesome boy or girl. The Committee on Instruction in Agriculture of the Association of American Agricultural Colleges and Experiment Stations, recommends generalized nature study, with school gardens, in the first three grades; nature study with school and home gardens in the fourth, fifth, and sixth grades; and elementary agriculture in the seventh and eighth grades. The Committee has prepared a syllabus of a course in elementary agriculture. (Circular 60, Office of Experiment Stations.)

The place of nature study. Nature study in the elementary schools has not been uniformly successful. One reason is that some teachers have endeavored to teach Nature out of books. The mere memorizing of names or classifications is a waste of time, if given as nature study. Others have insisted upon the morphological point of view. That is, the child is assigned to minute studies of form or structure of plants or animals. This may be a necessary method for the adult student, but is very little needed in the instruction of a child, who is interested in the dynamic aspect of Nature. *Action, use,* as has been shown by Binet, Barnes, Shaw, O'Shea, Hodge, and others, are the aspects of objects that appeal to the boy or girl. To utilize this

natural mode of reaction or interest of the child, in order to lay in him a deep foundation of knowledge about Nature, of curiosity and zeal for scientific research in later years, this should be an aim in nature study.

Hodge(27) and Nolan(36) agree that nature-study of the right type should precede definite instruction in agriculture. Says Nolan:

> Before the seventh grade of the public school, agriculture should probably not be taught as a vocational or technical subject. Nature-study should here be the content and spirit of the work. Nature-study should be prevocational to agriculture.

Stimulating factors. The progress of agricultural education in the United States has been aided by many forces. Particularly inspiring was the example of France in the matter of economical use of land-areas. The conviction has been growing that notwithstanding our own efficient use of *man-power*, that our waste of possibilities in *land-areas* for agriculture cannot continue. The general introduction of nature study prepared the way, and, as shown by the monograph of Jewell in 1907, the school garden movement contributed a share in preparing the way for a more elementary and general agricultural education.(49a) The adoption of school gardening is becoming more and more a practice of pedagogical and of economic value, as shown by the recent studies of Jarvis(49h), and Randall(49m). Probably the majority of city school superintendents are encouraging some form of school gardening. The necessity of food conservation and the efforts of the United States Food Commission has mightily stimulated interest in agriculture of many types.

School garden movement. Large gains in food production and conservation during 1918 were attributed by the Bureau of Education to city gardening. "A million and a half boys and girls in cities, towns, and industrial villages, directed by 25,000 or more teachers, have produced millions of dollars' worth of

vegetables on thousands of acres of land that would otherwise have been unproductive."

The United States Commissioner of Education, Dr. P. P. Claxton, thus advocates the school garden:

IT IS GOOD FOR CHILDREN

To work under kindly and intelligent direction, with their feet in the soil, their heads in the sunshine, and their lungs filled with good fresh air;

To work till they are tired and hungry, and can eat heartily and sleep soundly;

To work with Nature and become familiar with Nature's phenomena and laws as they can not from any set lessons in school;

To work at tasks that can not be finished in an hour, or a day, or a week, but which must continue through weeks and months and years, with a reward only for those who hold out faithfully to the end;

To form the habits of endurance to which such work must lead;

To work at something in which the relations of cause and effect are so evident as they are in the cultivation and growth of crops;

To work at problems the results of which are not wholly subjective, and in which their degree of success or failure is written more plainly and certainly than by per cent marks in the teachers' record books;

To know the mystic joy of work in coöperation with the illimitable and unchanging forces of Nature;

To come to learn the fundamental principle of morality that every person must contribute to his own support, and by labor of head or hand or heart pay in equal exchange at least for what he consumes.(42)

Agriculture for city boys. The last thirty years have been a period of remarkable growth of city population. In 1890, the urban population was 36.1 per cent; in 1910, it was 46.3 per cent of the whole population of the country. Cities differ characteristically from each other, and from the country. Cities differ with regard to size, races, proportion of sexes, factories, residences, booms, decay, railroads, seaports, cultural and moral conditions. Cities differ from the country in the concentration

of diverse population within small areas, industrial and commercial establishments, community provisions for public utilities, e. g., water, gas, sewerage, electricity, transportation, manifold schools, theatres, libraries, churches, etc.

Agriculture for city boys because of its educational possibilities has often been advocated. The tired man of the city also exhibits at times a fascination or interest in a rural life remote from the artifact of his own existence and from the rush, smoke and noise of the city. Enthusiasts have even dreamed of overcoming the habit and lure of the city, and consequently of checking the disproportionate growth of the city by generating a back-to-the-farm movement. No remarkable results in this direction have been achieved.

However, patriotic impulse as well as economic necessity during war time have stimulated both a widespread revival in home-gardening and also in some parts of the country an exodus of city boys to work on farms. Professor Dean claims that we can not much longer avoid the question of bringing agriculture to the city boy, or, rather, taking the city boy to agriculture.(15) Experience during the summer of 1917 with city boys working on farms brought forcibly to attention some of the advantages of a closer relation between city children and country life, when educationally supervised. He points to the modification of the school-attendance law of New York State made to facilitate this movement, as well as to the discretionary powers of state educational officials in the matter. For instance, the New York Commissioner of Education issued regulations, in substance as follows, regarding children who might be employed:

> Boys only, 15 years of age and above, residing in cities.
>
> Boys only, 14 years of age and above, residing elsewhere than in a city.
>
> Girls, 14 years of age and above, residing outside of cities, may work at home in the district in which such girls reside, or at a place sufficiently near such girls' homes as to afford supervision by their parents.

No child shall be employed or permitted to work on farms and gardens until such child shall obtain a farm-garden permit.

No child shall receive a farm-garden permit who does not present to the issuing officer the written consent of his parent or guardian and who is not found to be physically competent to perform the labor proposed.(15)

Farm-craft lessons. Under the direction of the College of Agriculture, University of Illinois, coöperating with the State Council of Defense, during 1918 a valuable series of farm-craft lessons was prepared and given wide distribution. The lessons originally were intended for the use of Volunteers of the U. S. Boys' Working Reserve under the auspices of the U. S. Department of Labor. Dean Eugene Davenport edited and enlarged the series and afterwards an edition of 350,000 was printed by the United States Department of Labor under the title "Farm Craft Lessons." The lessons doubtless will be of permanent value. Expressed in simple language, they are interesting and practical. Here are typical subjects from the original series:

Lesson	*Subject*	*Author*
1	The American Boy and the War	Eugene Davenport
2	When the City Boy Goes to the Farm	Eugene Davenport
3, 4 & 5	The Horse.	J. L. Edmonds
6	The Cow	
7	Swine	W. J. Carmichael
8	Farm Machinery	
9	The Wagon and Its Care	E. A. White
10	The Plow	E. A. White
11	Cultivating Corn	
12	The Mower	
13	The Hoe and Its Uses	J. W. Lloyd
14	Wrenches and Other Machine Tools	G. H. Radebaugh
17	Useful Knots	E. A. White
19	Care of the Garden	C. E. Durst
20	Rainy Days on the Farm	A. W. Jamison

Secondary Instruction

Characteristic questions. Provision for instruction in agriculture in high schools is a different problem from providing such instruction in the elementary schools. The tendency toward specialization of subject matter, the nature of the school, the relative physical and mental maturity of the pupils, and the near approach to vocation make agricultural education easier to organize in the high school than in the elementary school. On the other hand, the development of the social instincts and interests in early adolescence, and the facts that more extensive equipment is needed and that few good text-books on secondary agriculture exist, complicate the problem.

Development. Schools of secondary grade for agriculture exist in France, Japan, Sweden, Denmark, Ireland, Germany, Austria. Much of the agricultural instruction in the United States given by colleges under the Morrill Act of 1862 was of secondary grade, and the extension work of these colleges and of the United States Department of Agriculture is largely of secondary grade. The first successful agricultural high school in this country was established in 1888 in connection with the University of Minnesota. In 1898 the number of agricultural high schools had increased only to ten. Statistics collected in 1909 showed that in all, 500 institutions (high schools, normal schools, colleges)were giving secondary instruction in agriculture.(9) The table below shows the remarkable increase of agricultural education since that time. The table on page 202 is from a bulletin of the United States Bureau of Education.(49o)

High school departments. Tendencies favor the support of departments of agriculture in the high schools rather than support of separate agricultural schools. Assistant Director Hawkins of the Federal Board pointed out that such departments in high schools usually have a minimum amount of equipment and only one or two teachers of agriculture. "Until recently

TABLE XII

SUMMARY OF INSTITUTIONS GIVING INSTRUCTION IN AGRICULTURE IN 1915–16

NAMES OF INSTITUTIONS	Number of institutions	Students in agriculture
I. State agricultural colleges	[1] 50	.....
Students in 4-year college courses	.....	16,008
Students in 1 and 2 year college courses	.....	10,332
Students in subject-courses of less than 12 weeks	.....	14,108
II. State agricultural colleges for negroes	17	.....
Students in 4-year agricultural courses	.....	2,053
III. Other universities and colleges	[2] 16	820
IV. Private secondary schools (not special agricultural schools)	149	2,601
V. Private agricultural secondary schools	12	.....
VI. Secondary and higher schools for negroes	107	.....
VII. Public normal schools	[3] 124	.....
VIII. Public institutions for juvenile delinquents	38	.....
IX. Secondary schools of agriculture maintained by the State agricultural colleges at the colleges	28	3,958
X. Special agricultural schools receiving state aid	74	6,643
XI. Vocational agricultureal department in public high schools under state supervision	[4] 421	.....
XII. Public high schools	2,981	60,925

[1] Not including separate state agricultural colleges for negroes, given in II.

[2] Not including separate colleges for negroes given in VI.

[3] Does not include 27 county normal training schools in Wisconsin, all of which teach agriculture.

[4] Many of these are included in the 2,981 following.

these schools also have given more attention to instruction in the science of agriculture than they have to farming. With the

growth and development of the home project idea, however, they are relating the classroom instruction more closely to farming conditions and farm practice as well as extending the work of the school to the study and supervision of some practical farm work carried on by the pupils at their homes. The home project is a project in farming carried on at home by the pupil under the direction of the teacher."

"While there are all sorts of combinations and variations of these two types, it is usually possible, by determining whether or not the supervised practical work is to be done at the school or home, to classify all schools under one or the other of these two heads. This classification relates entirely to day schools. It is also possible to set up part-time or evening schools. These are not specifically mentioned in the law; neither is specific mention made of a day school of agriculture. It is assumed, therefore, that part-time or evening classes will be organized on the same general lines as trade extension, part-time, or evening schools for industry, that is, that the evening schools will be for those who have entered upon the occupation of farming and that the instruction given will be supplementary to the day employment and that part-time schools will be for the trade extension type, that is, for persons who are already engaged in the business of agriculture, but who, during a portion of the year or a portion of the day, week, or month wish to secure instruction supplementary to the business of farming in which they are engaged."(1a)

The following conditions should obtain in the agricultural department of a high school, according to the Federal Board:

(*a*) A room equipped primarily for instruction in agriculture. Such a room should not be fitted up with the ordinary seats and desks of the schoolroom, but should have movable tables and chairs which may, on occasion, be moved to one side in order to provide for demonstrations requiring large apparatus, or even the presence of a coop of chickens.

(*b*) Sufficient equipment to demonstrate the ordinary improved scientific methods of testing milk, incubating eggs, grafting trees, testing soils, making butter, etc.

(*c*) Suitable room for properly storing apparatus and properly caring for materials collected in the community, such as grains, grasses, fruits, vegetables, small implements, poultry, feeds, animal feeds, etc.

(*d*) A good, but not necessarily large, collection of reference books and bulletins.

(*e*) A few good farm papers and periodicals.

(*f*) The equipment for a group of from 15 to 20 pupils will cost from $350 to $500. In case farm mechanics is to form a part of the course about $200 should be added for such equipment. If farm mechanics is to be a part of this course it is better to have a room especially equipped. The course in farm mechanics is largely a course in toggery and repairing, not in building taborets and necktie racks. Some of the subjects which would be included in this course are rope splicing, knot tying, harness mending, and building chicken coops, milking stools, sawhorses, gates, etc.

While the statement is made that the equipment for a group of from 15 to 20 pupils will cost from $350 to $500, it is perfectly possible to equip a school suitably, especially for the first year, on about one-half this estimate. This would, however, be an absolute minimum based upon the assumption that the school already had suitable laboratory facilities and equipment for biology, chemistry, and physics. It is also to be noted that while the departments may get along very well without any land, it is always advisable to have a small plot or perhaps a quarter of an acre available for use as an out-of-door laboratory, rather than as a demonstration farm or plot.(Ibid.)

Special or separate schools. These "special" agricultural schools often have extensive equipment in the way of buildings, farm lands, machinery, etc. They are equipped to give boys practical experience in farming as well as to teach the science of agriculture. Examples of special or separate schools are the county schools of Wisconsin and Massachusetts and the state schools of New York and Minnesota.

Courses of study. Various adaptations of plans and outlines however excellent, must be made to suit local conditions. Valuable are the suggestions of the Massachusetts State Board bearing upon the problems of organization, equipment, selection of teachers, finance, methods of instruction, and courses of study, for agricultural secondary schools or departments of agriculture in high schools. These suggestions have been set forth in detail in publications of this Board. We are reprinting herewith two instructive diagrams illustrative of Massachusetts practice in the matter of courses of study.(33)

CAREER MOTIVE—BETTER FARMING

VOCATIONAL EDUCATION AT A COUNTY AGRICULTURAL SCHOOL
For All-day Pupils has Two Parts

Part 1.—Intensive Training 80 Per Cent. of Pupil's Time		Part 2.—Extensive 20 Per Cent. of Pupil's Time
(1) 50 Per Cent. in Project Study and Project Work, centering on—	(2) 30 Per Cent. "Related Study," consisting of such close correlation with the project study and project work of the following activities or subjects of instruction as to warrant the prefix "farm" or "agricultural:"	20 Per Cent. Cultural and Good Citizenship training in such subjects as—
A. Projects of the Pupils. a. At home, as a rule. b. At school, rarely. c. Pupil responsible, but supervised by his instructor.		
B. Projects of the School. a. Illustrative of well-proved methods, crops, etc.	Farm arithmetic	English
b. Trial, as to adaptability of promising methods, crops, etc., to local conditions.	Farm biology	History
c. School responsible, but uses projects for group instruction of pupils in observation and practice work.	Farm physics Farm chemistry	Citizenship
	Farm entomology	Government
C. Substitutes for Projects. a. Work on approval farm, with agreed upon educational duties as cost-accounting one or more cows or one or more crops.	Farm veterinary science Farm drawing	Economics
b. Work on the school farm, with educational duties like the above.	Farm shop work Farm typewriting and filing	Drawing, freehand and mechanical
c. Employer chiefly responsible but supervised by instructor.	Farm accounts	Hygiene and physical training
	Farm journal reading	Music
	Agricultural economics	Recreation

DIAGRAM OF COUNTY AGRICULTURAL SCHOOL EDUCATION.(33)

CAREER MOTIVE—BETTER FARMING

VOCATIONAL EDUCATION IN A HIGH SCHOOL AGRICULTURAL DEPARTMENT

For Day Pupils should have Two Parts

Part 1.—Intensive Training 50 Per Cent. of Pupil's Time	Part 2.—Extensive 50 Per Cent. of Pupil's Time
Project Study and Project Work, centering on—	Cultural and Good Citizenship Training, selected from one or more of the regular high school courses, and dealing with such subjects as—
(1) Projects of the Pupils A. At home, as a rule. B. Near home, occasionally. C. Pupil responsible, but supervised by structor.	English, every year
(2) Projects of the Department. A. At the high school, rarely. B. Neighborhood demonstrations, as of pruning, spraying, hotbed making, or greenhouse work. C. Instructor responsible, but uses projects for group instruction in observation and practice work.	Social science, including community-civics and economics Natural science, including elementary science, biology, physics and chemistry
(3) Substitutes for Projects. A. Work on approved farms, with agreed upon educational duties, as cost-accounting one or more cows or one or more crops. B. Employer chiefly responsible, but supervision by instructor.	Drawing, freehand and mechanical Shop work Business, including typewriting, business forms and filing, bookkeeping, commercial geography and commercial law
(4) Remark.—The agricultural instructor must, as a rule, assume full responsibility for teaching the "related study" required for the proper understanding and execution of the projects of his pupils. He must generally teach his boys the vital correlation between their projects and such subjects and activities as arithmetic, biology, physics, chemistry, entomology, drawing, shop work, accounting, filing, farm journal reading and agricultural economics.	Physical training Music Recreation

Diagram of High School Agricultural Department Education.(33)

Study and Teaching vs. Practice of Agriculture

Farming by graduates. How many persons are taught agriculture; how many so taught follow it as a vocation? The gratifying growth of secondary agricultural education seems to mark but a beginning of what should be, when we contrast the numbers of students taking agriculture in public high schools during 1915 (seven per cent. of the total) with numbers taking

algebra (48 per cent.), geometry (26 per cent.), Latin (37 per cent.), rhetoric (48 per cent.), German (24 per cent.), French (eight per cent.), drawing (22 per cent.), etc. We know that a large proportion of our population is engaged in agriculture and only an insignificant fraction of the agricultural workers of the country ever pass through college.

College enrollment. Because of the vast expenditure of the Government and of the States for agricultural education of secondary and of college grades, the citizen may carelessly assume that theory and teaching in these schools are followed by life-work on farms. It is yet to be shown clearly what proportion of the thousands of students enrolled in agricultural and mechanical colleges have followed practical agriculture afterwards. Neither is it to be assumed that all of the students enrolled in agricultural and mechanical colleges are actually taking agriculture. For example, consider the enrollment in principal divisions of these colleges. Table XIII is compiled from the U. S. Education Report, 1917, vol. II, pp. 323.

TABLE XIII

ENROLLMENT IN PRINCIPAL DIVISIONS OF AGRICULTURAL AND MECHANICAL COLLEGES FOR WHITE STUDENTS

DEPARTMENTS	1911–12	1912–13	1913–14	1914–15	1915–16
Agriculture	10,701	12,462	14,844	17,169	16,874
Home economics	2,506	3,074	4,018	4,431	5,177
Mechanic arts	15,702	15,141	16,235	16,554	17,097
Short and special courses	10,106	11,300	15,510	11,997	12,181
All departments	84,633	90,705	105,803	114,905	119,886

Theory and practice. Some of the states most widely known for development of theory and experiments in agricultural instruction actually have had small enrollment in the agricultural courses of public high schools. Massachusetts, for example, has developed scientifically an application of the project-method of teaching agriculture, widely heralded and imitated. The educational administration and organization of Massachusetts

is regarded as unusually efficient. Massachusetts is more of a manufacturing than an agricultural state, but the vocational agricultural schools of Massachusetts were given considerable prominence in the display of rural and agricultural exhibits at the Panama-Pacific exhibition (49k). Nevertheless during 1915 only 186 boys and girls were enrolled in elementary and secondary courses in agriculture in the whole state of Massachusetts (49°). Throughout the country, as a rule, the small enrollments and the total investment in agricultural education and the need to conserve and develop our resources make desirable a revival of interest to enroll more boys and girls in agriculture for vocation. Recent statistics exhibit encouraging showings. At present, however, there seems to be little danger of agriculture displacing immediately the stock subjects of average high school instruction, which probably remain as the choice rather of academic tradition than of individual and social need.

A vertical view. Our sketch of various phases of agricultural education of elementary, secondary, and college grades, reveals the necessity of taking a vertical rather than a horizontal view of agricultural work in the schools. It is evident that the work needs better coördination in order to effect coöperation and understanding among the agencies participating, and to eliminate wasteful duplication.

The following outline is intended to give such a "vertical view," but it probably contains references to some schools that do not exist, and is somewhat artificial in its classification. It at least exhibits in brief space plans for a wide range of instruction in agriculture. It may be useful to the student who desires to schematize an inclusive plan for different grades of agricultural instruction. The outline is substantially the one published by the Bureau of Education and abstracted from the report of President Butterfield.(48)

An Outline of Means for Agricultural Education

I. *The Public Schools*

Presenting agricultural material as one means of general education, through—

1. Boys' and girls' agricultural clubs; Supervision by farm bureaus and college.
2. School subjects: Nature study; elementary agriculture.
3. Courses in agriculture in the high school: Three to five hours per week for one to four years.

II. *The Public Schools*

Teaching agriculture for vocational ends, through—

1. Agricultural departments of the high school: To reach pupils 14 to 16 years of age and 16 to 18.
2. Continuation and extension schools: In connection with public schools, to reach pupils no longer enrolled in the public schools, ages 14 to 18.
3. Agricultural education for families.
4. The public schools as centers for extension work in agriculture and country life, carried on by the farm bureaus and the college.

III. *County or District Agricultural Schools*

1. General and specialized agriculture: Temporarily for boys 14 to 18.
2. Specialized courses in agriculture, such as poultry husbandry, dairy husbandry, pomology, etc., as the eventual purpose for boys 16 to 18; these courses correlate with the work of the agricultural departments of the high schools.
3. Extension work, in coöperation with the county farm bureaus and improvement leagues; this should be coördinated closely with the work of the county schools on the one hand, and with the agricultural college on the other.

IV. *The Agricultural College*

1. Investigation.
   (*a*) Research.
   (*b*) Experimentation and testing.
   (*c*) Coöperative studies in agricultural resources.
2. Teaching.
   (*a*) The four-year course for a degree.
   (*b*) Graduate work.
   (*c*) Short courses for pupils of 18 years and upward.
   A. Short courses of college grade, one to two years.
      (1) For graduates of county agricultural schools.
      (2) For graduates of agricultural departments of high schools.
      (3) For graduates of high schools who have not had agriculture and are not eligible to the four-year course.
      (4) For graduates of liberal arts colleges.
      (5) For adults 21 years and over not eligible to four-year course.
   B. Short courses giving elementary and specialized work, if the demand requires, for those 18 years of age upward.
      (1) Winter courses of 12 weeks for highly specialized work, such as butter making, etc.
      (2) Winter course of 20 weeks for students desiring more general work.
      (3) Summer course of 6 weeks, primarily for teachers of non-vocational agriculture.
3. Extension service.
   (*a*) General extension work for adults.
      (1) Lectures and study clubs.
      (2) Extension schools.
      (3) Correspondence courses.
      (4) Demonstrations.
   (*b*) Junior-extension work.
   (*c*) Extension work for urban and suburban residents.

NOTE.—So far as possible the work in rural home-making will parallel agricultural work throughout the whole system.(48)

Applications of the Smith-Hughes Law

Agricultural questions. The legal obligations imposed by the Smith-Hughes Act, and also the discretionary interpretations of the Federal Board disclose many questions in the matter of agricultural education lower than college grade.

(a) *Duplication.* Since land-grant colleges were conducting considerable agricultural work of secondary or lower grade, and already were receiving federal moneys from the Morrill, the Nelson, and the Agricultural-Extension funds, the possibility of duplication appeared under the Smith-Hughes Act. This Act provides:

> "That there is hereby annually appropriated, out of any money in the Treasury not otherwise appropriated, the sums provided in sections 2, 3, and 4 of this act, to be paid to the respective States for the purpose of coöperating with the States in paying the salaries of teachers of trade, home-economics, and industrial subjects, and in the preparation of teachers of agricultural, trade, industrial, and home-economics subjects . . ." (Sec. 1.)
>
> ". . . That such education shall be of less than college grade . . ." (Sec. 10.)

The interpretation of the Federal Board in this matter was that the only way in which a land-grant college can use federal money under the Smith-Hughes Act for the salaries of teachers of agriculture is by making a separate organization of vocational classes of less than college grade. (Federal Board, Bulletin 1, pp. 36–37).

(*b*) *Payment of directors and supervisors.* If a person divides his time between supervision of agricultural subjects and the training of teachers of agriculture, then a definite division of his time between supervision and teacher-training should be made at the outset of the fiscal year and adhered to. (Ibid., 37.) The Federal Board believed it to be the intent of the Smith-Hughes

Act that States should pay for salaries of directors of agriculture, although latitude was allowed during the year 1917–1918.

The principles to govern the payment of federal moneys under the Smith-Hughes Act for supervisors of agriculture are also open to interpretation. The Act provides:

"That any State may use the appropriation for agricultural purposes, or any part thereof allotted to it, under the provisions of this Act, for the salaries of teachers, supervisors, or directors of agricultural subjects, either for the salaries of teachers of such subjects in schools or classes or for the salaries of supervisors or directors of such subjects under a plan of supervision for the State to be set up by the State board, with the approval of the Federal Board for Vocational Education."

". . . The State boards shall prepare plans showing . . . in the case of agricultural subjects, the qualifications of supervisors or directors . . . Such plans shall be submitted by the State Board to the Federal Board for Vocational Education and if the Federal Board finds the same to be in conformity with the provisions and purposes of this Act, the same shall be approved." (Sec. 8.)

The decisions of the Federal Board were these: Any states may use the appropriation for agricultural purposes, either for the salaries of teachers in schools, or for salaries of supervisors or directors, under a plan of supervision prepared by the State Board and approved by the Federal Board. A supervisor must meet qualification standards, particularly if a part of the time of the supervisor of agricultural education is given to industrial and home economics education. The amount of time and the amounts prorated for salaries must be prorated from sworn reports. (Ibid., 37–38).

(*c*) *Club work.* The question has been raised: Can one person serve in both positions, as a state supervisor of agriculture and as a state leader of boys and girls' club work? The Federal Board ruled that he might not so serve, except (and this only for the year, 1917–1918) when his status is clearly defined, and federal moneys under the Smith-Hughes Act are to be used only

to pay for that part of his time given to supervision of instruction in vocational agriculture. (Ibid., 38.)

(*d*) *Short courses.* Moneys from the Smith-Hughes Act may be used for short course in agriculture. The Act reads:

". . . That such schools shall provide for directed or supervised practice in agriculture, either on a farm provided for by the school or other farm, for at least six months per year . . ." (Sec. 10.)

The ruling of the Federal Board was that the length of the school course in agriculture is independent of the required six months of supervised practice on a farm, since that practice must be regarded as only a part of the regular instruction, the other part being carried on in class. Pupils may be in attendance on school classes for any period of time necessary to complete all other than the practical work. This time may be long or short, according to the state plan adopted. It might be, at least in theory, one week, or one month, six months, nine months, or two or more regular school years. The State Board, however, should set up a system of reports clearly showing whether or not the practical work was properly supervised. The practical work may be either regular farm occupations or specific projects (ibid., 38–39).

(*e*) *Local distributions of funds.* The allotment of agricultural funds to the States under the Smith-Hughes Act is on the basis of rural population. The industrial funds are alloted upon the basis of urban population. Nothing is said in the Act regarding where the States shall spend the respective funds—whether for agriculture, industries and trades, or home economics:

"Said sums shall be allotted to the States in the proportion which their rural population bears to the total rural population in the United States, not including outlying possessions, according to the last preceding United States census . . ." Sec. 2.)

"Said sums shall be allotted to the States in the proportion which

their urban population bears to the total urban population in the United States, not including outlying possessions, according to the last preceding United States census . . ." (Sec. 2.)

"The moneys so received by the custodian for vocational education for any State shall be paid out on the requisition of the State board as reimbursement for expenditures already incurred to such schools as are approved by said State Board and are entitled to receive such moneys under the provisions of this act." (Sec. 14.)

The Federal Board declared that the distribution of the funds is a matter to be determined by the State Board which may accordingly place the funds where it believes the money will do most good. (Ibid., 39.)

(*f*) *At least dollar for dollar.* Every dollar of federal money must be matched by at least one dollar of state money. The Act provides:

". . . The moneys expended under the provisions of this act in cooperation with the States, for the salaries of teachers, supervisors, or directors of agricultural subjects, or for the salaries of teachers of trade, home economics, and industrial subjects, shall be conditioned that for each dollar of Federal money expended for such salaries the State or local community, or both, shall expend an equal amount for such salaries; and that appropriations for the training of teachers of vocational subjects, as herein provided, shall be conditioned that such money be expended for maintenance of such training, and that for each dollar of Federal money so expended for maintenance the State or local community, or both, shall expend an equal amount for the maintenance of such training . . ." (Sec. 9.)

(*g*) *Teaching vs. supervision.* The Federal Board made the rulings that: (a) The teaching and the supervision of agricultural education are distinct and separate lines of work; (b) in every instance States must show that federal funds for each purpose will be matched by at least an equal sum furnished by the state or local commuities for the same purpose; (c) the method in which a State may use its allotment for supervision of agri-

cultural education will be controlled by the provisions of the plan approved by the Federal Board. The provision is:

"That any State may use the appropriation for agricultural purposes, or any part thereof allotted to it, under the provisions of this act, for the salaries of teachers, supervisors, or directors of agricultural subjects, either for the salaries of teachers of such subjects in schools or classes or for salaries of the supervisors or directors of such subjects, under a plan of supervision for the State to be set up by the State board with the approval of the Federal Board for Vocational Education . . ." (Sec. 10.)

(*h*) *Mixed classes.* Of importance to institutions training teachers for agriculture, trade and industrial subjects, and home economics, under the Smith-Hughes Act, was the following ruling of the Federal Board (Bulletin I, pp. 35–36):

Federal funds for the training of teachers may be used only on the following conditions:

(1) That the classes for which these funds are used are composed entirely of those students who are preparing to teach in vocational schools. Such students must be pursuing the course of study approved by the State and Federal boards.

(2) That no separate classes for which federal funds are used are to parallel other classes being conducted in the institution. When such separate classes are formed it must be clearly shown that they are a necessary addition to classes already in operation for other students. Instruction in these separate classes must be sufficiently differentiated from the regular classes to justify their establishment and maintenance.

The Federal Board, however, declared that an institution may use moneys under both the Nelson and the Smith-Hughes Acts for the maintenance of the same teacher-training classs in agriculture. (Ibid., pp. 40). It was the policy of the Board in general to regard the Nelson amendment of the Morrill Act as meeting the need for the training of teachers for rural schools, or in other schools not meeting the requirements of the Smith-

Hughes Act, whereas the Smith-Hughes fund was to be used for training teachers primarily for service in schools meeting certain definite standards under the Act. The Federal Board also required that where land-grant colleges operate in the same buildings a teacher-training school in agriculture and a secondary school fitting for the pursuit of agriculture, absolute separation be made of all instruction for teacher-training classes from that of secondary grade, if either or both are to receive moneys under the Smith-Hughes Act. (Ibid., pp. 41.) In the opinion of the Federal Board it was not the intent of the Act to use federal moneys for general supervision of agricultural training in the States, as distinct from the supervision of schools and classes receiving federal moneys for instruction in agricultural subjects. (Ibid., pp. 41.)

(*i*) *The training demanded.* A fundamental specification of the Smith-Hughes Act concerning agricultural education is the following: The controlling purpose of such education shall be to fit for useful employment; that such education shall be of less than college grade and be designed to meet the needs of persons over fourteen years of age who have entered upon or who are preparing to enter upon the work of the farm or of the farm home;—that such schools shall provide for directed or supervised practice in agriculture, either on a farm provided by the school or other farm, for at least six months per year; that the teachers, supervisors, or directors of agricultural subjects shall have at least the minimum qualifications determined for the state by the state Board with approval of the Federal Board. (Smith-Hughes Act, Sec. 10.)

The Federal Board required at the outset that the State Boards should provide within a reasonable time new standards of training in agriculture, for qualifications of teachers serving under the Smith-Hughes Act. The State Boards with the approval of the Federal Board establish minimum requirements for persons undergoing training as teachers. This training is

given only to persons who have had adequate vocational experience, or contact in the line of work for which they are preparing themselves as teachers, supervisors, or directors, or who are acquiring such experience or contact as a part of their training. The training is carried out under the supervision of the State Board, in schools or classes under public supervision or control. Not more than twenty per cent of the money appropriated under the Act for the training of teachers of vocational subjects to any State for any year shall be expended for any one of the following purposes: For the preparation of teachers, supervisors, or directors of agricultural subjects, or the preparation of teachers of trade and industrial subjects, or the preparation of teachers of home economic subjects. (Section 12 of Act.)

Pedagogical Problems

Preparation of teachers. Where the elements of agriculture are taught in elementary or in high schools as a vocational subject, i. e., *vocational agricultural education*, the teachers of science may well correlate elementary science with the growing of agricultural products. Some high school teachers with practical farming experience may be trusted with agricultural courses which are truly vocational. The home-project plan of teaching agriculture is especially desirable for boys who live on farms.

It is recognized that the teacher of *vocational agricultural education* must be preëminently practical—with understanding, sympathy for youth, and with ability *to do*. "He must have common sense—the most uncommon of all senses. He must be not only a man among men, but a farmer among farmers—Life-long farm experience is desirable."

Massachusetts has set a high standard for the qualification of secondary teachers of agriculture. The diagram on page 218 exhibits in concise form the qualifications desired, as set forth by the Massachusetts State Board of Education.(33)

MINIMUM QUALIFICATIONS OF PROSPECTIVE INSTRUCTORS

For County or Separate Agricultural Schools and High School Agricultural Departments

1 Specifications		2 Farm Work Instructor	3 Related Study or Technical Instructor	4 Farm Work and Related Study Instructor	5 Non-agricultural Instructor
(1) Age	A. Without successful teaching experience.	21	21	21	No such applicant considered.
	B. With successful teaching experience.	21	21	21	21
(2) Farm Experience		Eight calendar years under farming conditions like those in Massachusetts.	Two calendar years, and vacations during agricultural school or college course.	Eight calendar years in farming if only special agricultural courses have been taken; 4 calendar years in farming if 2 years or equivalent in agricultural courses have been taken.	Knowledge enough of farming to enable the instructor to understand the aim of vocational agricultural education, and a natural inclination toward the betterment of country living.
(3) Academic Education		Grammar graduate.	High school or agricultural school graduate.	High school or agricultural school graduate.	College or normal school graduate.
(4) Technical Education		Special courses in agriculture.	Two years or equivalent in agricultural courses.	Two years or equivalent in agricultural courses.	Courses in subjects to be taught.
(5) Professional Education		Approved study of home-project methods of teaching agriculture.	Courses in home-project methods of teaching agriculture and related studies.	Approved study of home-project methods of teaching agriculture and related studies.	Course in pedagogy, and one year of successful teaching experience.
(6) Personality Satisfactory and with presumption of ability to handle pupils (Personal interview required).					
(7) Physique		Good health (attested by physician's certificate) and no deformity.	Good health (attested by physician's certificate).	Good health (attested by physician's certificate) and no deformity.	Good health (attested by physician's certificate).
(8) Sex		Men only.	Men only	Men only.	Men only.

DIAGRAM OF MINIMUM QUALIFICATIONS OF CANDIDATES FOR AGRICULTURAL SCHOOL AND DEPARTMENT INSTRUCTORSHIPS.(33)

It is evident that to secure men with such minimum qualifications renewed effort should be made to attract desirable men by means of adequate salaries into the work of teaching. More compensation, monetary and social, must go hand in hand with the elevation of standards for certification to teach.

A course for teachers. Suggestions for what ought to be the general content of a two or four year course for teachers of agriculture have been made by the Federal Board. The Board emphasizes the statements that no hard and fast classifications are used in the suggestions offered, and that supervised practice in teaching vocational agriculture must be stressed strongly. A notable omission under professional training is the *general history of education*. At least the reading of the briefer work of Graves, or of Monroe, should be required in order to give perspective and inspiration to the prospective teacher. The following table embodies the suggestions:(1a)

TABLE XIV

APPROXIMATION OF TIME IN A COURSE FOR TEACHERS OF AGRICULTURE (PRACTICAL EXPERIENCE NOT INCLUDED)

Agricultural	Sciences	Humanistic	Professional
4-year course, 40 per cent; 2-year course, 60 per cent.	4-year course, 30 per cent; 2-year course 15 per cent.	4-year course, 20 per cent; 2-year course 15 per cent.	4-year course, 10 per cent; 2-year course 10 per cent.
Field and forage crops. Soils and fertilizers. Animal husbandry and dairying. Poultry husbandry. Horticulture. Vegetable gardening. Farm mechanics. Farm management, etc. Both general and special courses in the above.	Chemistry. Physics. Biology. Geology. Etc. Agricultural chemistry. Economic entomology. Plant pathology. Plant breeding. Veterinary science. Bacteriology. Etc.	English. History and Government. Rural economics. Rural sociology. Rural organization. Etc.	Educational psychology. Principles and general methods School organization and management. Etc. Vocational education, history and principles. Special methods (in agriculture). Practice teaching. Etc.

Technic in teaching. Modern teachers and researchers such as Suzzallo, McMurry, Bagley, Parker, O'Shea, and Hosic,

have clarified the matter of technic of general instruction for elementary and secondary schools, and are aiding in placing *methods* of teaching different subjects upon a scientific basis. It is not assumed in these days that definite procedure or methods can be laid down in advance to suit most if not all situations where instruction is called for. A dozen years ago the writer ran across a pedant who so highly esteemed his own "mastery of methods" that he boasted openly that "he could teach anything." Contemporary educational science condemns such quackery. Experimentation taking the place of mere hypothesis in educational theory is yielding norms and procedure for the difficult work of instruction.

The project method. Borrowed from other fields the word *project* has come to denote a method, or group of methods of instruction, of high potential values, especially in the teaching of agriculture. As shown by Stimson, Heald, Stevenson, Krackowizer, and others, in procedure and results, the project system is probably superior to some other methods of teaching. There has been considerable waste of time and money, however, devoted to merely academic elaboration of the different meanings of the concept *project*. There is a type of mind which acts as though a problem were solved when once the words symbolizing it have been minutely defined and classified.

Essentials of a home-project. In the project system, life activities hitherto considered outside of the school are organized and utilized beneficially as educative processes in the life of the pupil. Heald, referring to Stimson's earlier studies, to the Massachusetts plans, and to Department of Agriculture Bulletins, thus indicates the essentials of a home-project as a phase of vocational agricultural education:

1. A carefully drawn plan covering a *considerable extent of time, with a definite aim*, including some problems new to the pupil and outlining with sufficient detail the methods to be employed. This plan should be written and should be an exhibit in connection with the second essential.

2. An agreement between parent, pupil, and teacher, based upon the plan already prepared and so prepared as to eliminate later disagreements. The boy's financial privileges should be clearly stated.

3. Instruction in the school both in regular course and in special individual study to the end that the project work may be done intelligently and that the home may furnish the kind of laboratory practice best adapted to the school work.

4. Detailed records of method, time, cost, income, and other important factors which shall finally be summarized in—

5. A report including both a story and a complete accounting for the entire project period.

6. Supervision by a competent instructor of such a nature as to help the student to succeed in his project, to encourage him at times when difficulties arise and to hold him to his agreement; incidentally to impart instruction supplementing that of the classroom.(40)

Distribution of projects. The studies of Stimson, Heald, and Nolan, and those contained in state and federal bulletins and reports—render unnecessary any detailed treatment of the project-method in these pages. We are appending, however, another useful diagram (page 222) offered by the Massachusetts Board of Education to illustrate how a series of agricultural projects may be distributed through periods of years.

Agricultural and liberal education. The question of separating agricultural education and liberal education arises here as a similar question arises in every other field of specialized training for useful occupation. Again we revert to the necessary doctrine of balancing or weighing educational ideals and aims (ante, p. 45) rather than to mere partisanship, be it academic or utilitarian; of keeping open during the career of every individual adequate opportunity for elementary, for liberal, and for specialized vocational education compatible with the principles of democracy. We rely also upon the nature of instruction, upon the quality of teachers, upon the home, and upon social organizations to counteract any evil tendencies in separate, technical classes or schools.

FIGURE V

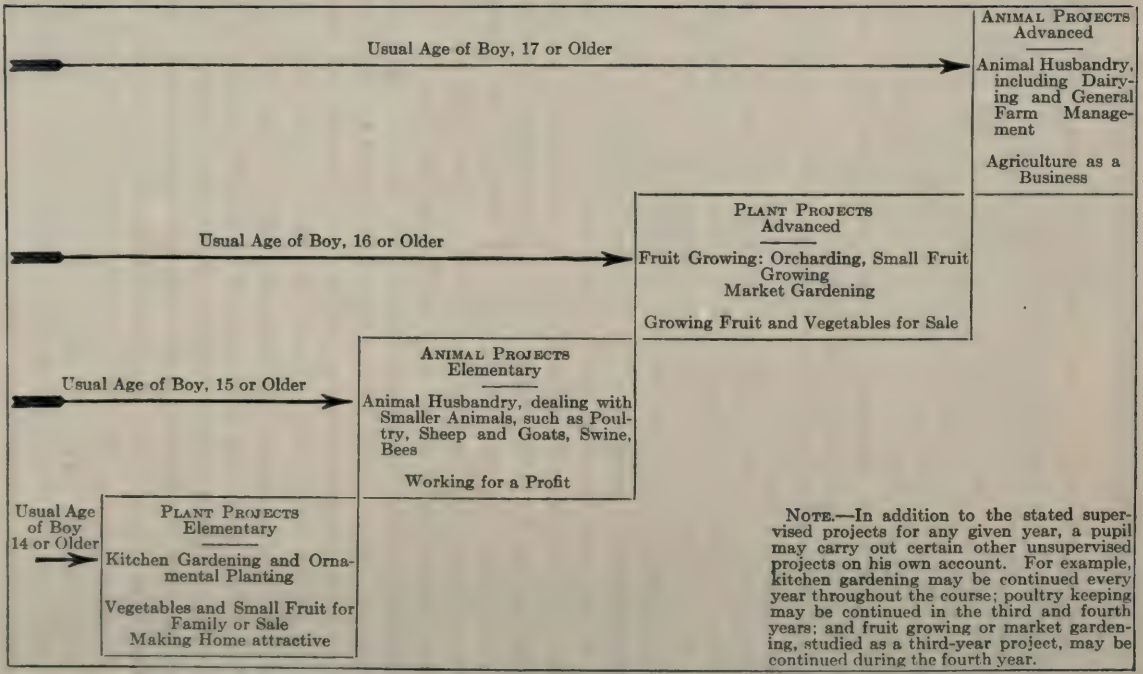


Diagram of Distribution of Major Products through a Four Years' Course in a County School.
(Reprinted with a slight revision from Bulletin No. 8, p. 8, of Massachusetts Board.)

The problem of whether an agricultural school should be separate and distinct may be a problem to be solved locally according to conditions. It may be necessary under certain circumstances to have separate agricultural schools, as entirely separate as some of the purely classical high schools. We believe that the former, too isolated, would tend to "peasantize" the farming population, just as the latter could breed intellectual pretenders or snobs, now that our vision of the interrelation of the different phases of education is some clearer. By no means, however, is there unanimity of conviction regarding the best ways to prevent agricultural education intended for the prospective or active farmer from becoming bookish, academic, theoretical, as witness the discussion of Snedden(43) and Cromwell(8).

Agriculture as therapy. Light agriculture under favorable conditions is being used for its health-imparting effects to invalids and the convalescent. In Europe, in Canada, and in the United States, gardens in connection with hospitals have been found of three-fold value for convalescent soldiers. To some of these it affords (1) necessary exercise, fresh air, sunlight, and (2) mental diversion; (3) it may give a vocational consciousness and ambition to the man who feels "I am undone."

A good example of agriculture used as occupational therapy, was the training offered to disabled soldiers and sailors at the Walter Reed General Hospital, Washington, D. C.

Practical work was offered in (1) elementary agriculture—general farming, dairying, farm management, farm mechanics, poultry husbandry, entomology, botany; (2) elementary horticulture-fruit growing, pomology, vegetable gardening, landscape gardening, floriculture, nursery practice, forestry, plant propagation.

For the reëducation of returned, disabled soldiers, and for their reëstablishment in civil life, farm activities have played an important part in France, England, Belgium, and especially

Canada. In the United States large opportunity existed for the use of tillable land by war veterans for vocational agriculture in extension of agriculture used during convalescence merely as therapy. (Id.)

Agricultural Education in Philanthropic and Other Institutions

Hampton and Tuskegee. There have been interesting developments of agricultural education in other than public schools or state colleges. The practical work at Tuskegee and at Hampton has long been illustrative of the benefits of agricultural and mechanical education especially to the negroes of the South, and to other peoples as well. Doubtless these institutions under the leadership respectively of Armstrong and of Washington have utilized some of the best things in the teachings of Pestalozzi and Fellenberg.

The Williamson Free School of Mechanical Trades. A notable example of agriculture in a semi-public institution is the Williamson Free School of Mechanical Trades of Williamson, Pennsylvania. This endowed school conducts courses for machinists, operative engineers, bricklayers, etc., as well as for prospective farmers.

A specimen course. The following is a reproduction of the "trade course in agriculture," as offered at Williamson during 1914:

Williamson Scientific Agricultural Trade Course

"*Farm Practice.* (1) Under this head will be classed the work in Farm Mechanics, which will consist of talks relating to the machines in use on the farm: Blacksmithing; farm carpentry; concrete construction; steam and gas engines and electric motors.

(2) Stock Judging: Talks with illustrations showing the correct type of the breeds of domestic animals; extensive work in judging classes and individuals.

First Year—Judging with score card.
Second Year—Judging without score card.
Third Year—Competitive judging.

(3) Dairying: Care and feeding of dairy cattle; the production of milk; stable sanitation; testing milk; handling milk for market; butter making; cream separators and dairy machinery; the manufacture of cottage cheese and commercial buttermilk; dairy bacteriology.

(4) Poultry Raising, including hatching by incubator and natural process; preparation of broilers for market; feeding for egg production and growth; mating and judging stock.

(5) Horticulture; grafting, spraying and diseases of fruit trees; commercial fruit growing; farm and market gardening.

(6) Market Farm Produce; the killing and curing of meats; lectures on the value of organization in marketing; and world's greatest markets, cold storage."

The work by years.

First Year—

Farm practice.....36 hours per week

"Between the hours of 5 and 7 a. m. and 1 and 5 p. m. the students are detailed to the various departments to carry on the work of the farm. This practice is to be closely correlated to the classroom work, and to be supplemented by "field talks" relating to the work in hand. Special emphasis is placed on the training of the students in efficiency. Time exercises are given and a continuous effort made to develop speed and accuracy in the performance of farm work."

Breeds of live stock	2	hours	per	week
Soils	2	"	"	"
Academic work: Arithmetic, history, geography, grammar, spelling, physiology, hygiene, botany—each 2 hours, total	12	"	"	"
Drawing	6	"	"	"
Literature	1	"	"	"
Music	1	"	"	"

Second Year—

"The work in Farm Practice during the Junior Year is a continuation of the plan as outlined for the Freshman Year.

Farm practice	36	hours	per	week
Agronomy and diseases of plants	2	"	"	"
Feeds and feeding (April to September)	2	"	"	"
Veterinary science (September to April)	2	"	"	"
Academic: April to September: Grammar and spelling, literature, civil government, physics, chemistry, commercial, each 2 hours	12	"	"	
Mensuration	3	"	"	"
September to April: Grammar and spelling, literature, civil government, physics, chemistry, commercial, each 2 hours	14	"	"	"
Algebra	1	"	"	"
Music	1	"	"	"

Third Year—

Farm Practice.

"Farm Practice five and one-half days per week for two successive weeks. Each third week the student will spend seven full days in the departments.

An opportunity will be given here for students to specialize in any of the various departments of the course.

Lectures will be given from time to time covering in detail some branch of farm practice. A chance will be given for original work, and each student will be required to assist in the management of the farm for a specified number of days. Time will be allowed for experimental work in crop growing, feeding and manufacturing farm produce. Special attention will be paid during the latter part of the year to the marketing of produce and the business management of a farm." (49).

The student body at Williamson is largely a select group of youths, chosen from a waiting list upon the basis of physical and mental capacity. The applicants must be at least 15 years of

age. The property includes some 25 buildings, and 230 acres of land. The school meets all expenses, including lodging, meals, clothing, etc.

Agriculture for delinquents and the feeble-minded. Out-of-door and agricultural activities have long been relied upon in special institutions to benefit unfortunates. Scores of so-called industrial schools maintained for juvenile delinquents utilize agricultural instruction in varying amounts and kinds. Examples of institutions of this type are St. Charles School for Boys, St. Charles, Ill.; Glen Mills Schools, Glen Mills, Pa.; Lincoln Agricultural School, Lincolndale, N. Y.; Lyman School for Boys, Westborough, Mass.; Preston School of Industry, Waterman, California; State Industrial School, St. Louis, Mo.; Wisconsin Industrial School for Boys, Waukesha, Wisconsin; Boys Industrial School, Topeka Kansas; Richmond County Reformatory, Georgia; Industrial and Training School of Shelby County, Tennessee; etc.(26) Agricultural activities are also found beneficial in the care and training of the feeble-minded. An interesting example is the Vineland Training School of Vineland, New Jersey.(6)

Agriculture in other institutions. The report of the U. S. Education Bureau during 1917 listed types of schools referred to above, and also contains data concerning other institutions utilizing forms of agricultural work. E. g.:

" In many State and county prisons, penitentiaries, and jails, farm work is required of the inmates. In a few of them definite instruction in agriculture is given through classroom work, lectures, etc. For instance, at the California State Prison at San Quentin, 318 inmates were enrolled and took agricultural courses through the extension division of the State Agricultural College in January, 1917. Twenty-three different courses were given. Weekly meetings of the agricultural students were held, at which special lectures in agriculture were given. In the California State Prison at Folsom, 70 men have been enrolled in agricultural classes during the past year. The work

is carried on under the general supervision of the State Agricultural College, an instructor coming to the prison every Saturday.

In the State penitentiary at Columbus, Ohio, in February, 1917, 46 inmates were taking or had completed courses in poultry, swine, horses, truck gardening, etc., all through the extension service of the State University. In the State Prison at Walla Walla, Wash., between 400 and 500 inmates work on the farm and receive instruction in the technical side of their work. In the State Penitentiary at Lansing, Kans., 20 inmates are enrolled in an agricultural extension course organized by the State Agricultural College. The plan has been followed for five years."

Improvement of Rural Life

City and country interested. Realization of the inevitable effect of rural conditions upon the life of the nation and the race gives strength to the movements for the improvement of rural life. Efficiency, sanitation, better schools adapted to the needs of society and of individuals, are powerful elements in this improvement. Agricultural education lower than college grade is of immediate importance to people living in the country, although the mechanical trades also are of use upon the modern farm. Education in mechanical industries and trades, however, concerns chiefly the city boy and girl. We shall consider in the next chapter some of the problems of this kind of education. In ultimate analysis, both country and city are interested in vocational education of all kinds and therefore join in its hearty support.

The advocates. Reports of the United States Department of Agriculture, of Experiment Stations, and published proceedings of the Association of American Agricultural Colleges and Experiment Stations probably contain the most complete materials for a history of agricultural education in this country. There are many names of men who have pushed the good cause of agricultural education which should be recorded in such a history. Among the names of such workers may be mentioned

the following roughly grouped into periods: (1860–1880) Levi Stockbridge of Massachusetts; Manley Miles, R. C. Kedzie, W. J. Beal, of Michigan; Samuel Johnson and Frank Storer of Yale; J. P. Roberts of Cornell; (1880–1919) W. A. Henry and H. L. Russell of Wisconsin; L. H. Bailey of Cornell; E. M. Shelton and G. T. Fairchild of Kansas; T. F. Hunt, now in California; W. H. Jordan, of New York; C. F. Curtis and R. A. Pearson of Iowa; C. G. Hopkins, H. W. Mumford, J. C. Blair, and Eugene Davenport of Illinois; W. R. Dodson of Louisiana; A. M. Soule of Georgia; M. A. Scovell of Kentucky; J. F. Duggar of Alabama; C. E. Thorne of Ohio; E. A. Burnett of Nebraska; H. J. Waters of Wisconsin; H. P. Armsby of Pennsylvania. The work of A. C. True, Director of States Relation Service, United States Department of Agriculture, has been of wide influence. On the plane of educational administration there must be included the name of E. P. Cubberley of California who has helped to show teachers how to improve rural life.(10)

Summary

The nine series of problems and topics we have brought before the mind of the reader are these:

1. It is a fact that agriculture diversified in method and location is the major industry of the country, both in importance and in numbers employed.
2. Elementary agriculture in the country and in the city is taking definite form, stimulated by need, by enlarging interests of pupils and teachers, and by favorable legislation and public support.
3. The question of separate vs. high school departments of education is still an open one in many communities. Progressive high schools are now modifying programs, and courses of study, curricula, and are employing practically qualified teachers of agriculture.

4. Large numbers of graduates from agricultural colleges do not engage in practical farming. Both in collegiate and in secondary schools, distinctions should be recognized between agricultural course that are vocational in aim, and those agricultural courses that are intended merely to enlarge knowledge, appreciation, and to be an adjunct to liberal education.
5. Better coördination is needed between the numerous instrumentalities of training in agriculture at public expense, whether in elementary, secondary or higher instututions. Students may profitably study tabular schemes showing a "vertical" view of the existing educational machinery for a better understanding of this problem.
6. The Smith-Hughes Law afforded liberal aid for States in the coöperative upbuilding of agricultural education of subcollegiate grade. Valuable are the regulations exacting teacher-training courses as a prerequisite for federal aid.
7. The pedagogical questions of organization of programs, courses of study, and of curricula are pressing. They can not be worked out in isolation, but through conferences, researches, and united effort of teachers, superintendents, university professors, and by state and federal specialists. Pedagogical dogmas however camouflaged about "methods of teaching" without regard to such scientific studies and coöperative efforts should be shunned.
8. Some of the private or philanthropic institutions, such as Williamson, Hampton, and Tuskegee, have already demonstrated important experiments in the practical working of agricultural courses. Other institutions have proved its utility in the social treatment of special types of persons.
9. Rural life and city life are becoming more and more interdependent. From the economic point of view the interests of the country have become the interests of the increasing urban population and the reverse is true.

In our next chapter we shall present materials that make plainer the problems of education in mechanical industries and trades—i. e., for occupations that concern predominantly the boy or girl of the city.

Problems

1. Show in what sense the education favored by the Smith-Hughes Act is extremely broad.
2. Can you draw a sharp line between agricultural education as a part of liberal education, and agricultural education for vocation?
3. Enumerate all of the different farming occupations in your county. Make some investigation of each type of occupation.
4. To what extent and how should the teaching of pure science (chemistry, physics, etc.) be safeguarded, in the case of agricultural programs in high schools?
5. In communities where separate agricultural high schools exist, how may a degree of general and liberal education be assured in the life-time of each student?
6. What are the principal advantages and disadvantages of agricultural courses in "regular" high schools?
7. Study typical programs, courses of study, and curricula in secondary agricultural schools or courses.
8. Classify and characterize the institutions giving secondary agricultural instruction in your own state.
9. Write a paper, or critique, concerning the interpretations of the Smith-Hughes Act by the Federal Board.
10. Read the discussion of Snedden and of Cromwell: "What is Agricultural Education?" (See references 8 and 43). Evaluate the arguments.
11. Study methods and results, pedagogical and economic, of use of agriculture in an institution for the care of feeble-

minded. Procure recent reports, and if possible visit several times an institution, e. g., Vineland.(6)

12. Make a similar study of a school for delinquents, e. g., St. Charles, Ill., or the Lyman School, Mass., or the Whittier School, California.
13. Study the possibilities in your own community of agriculture for city boys and girls.
14. What do you think of renting vacant land adjacent to cities and putting boys in charge of the work on a supervised project basis?
15. To what extent is it practicable for boys in the secondary course in agriculture to qualify themselves for an agricultural college?
16. What kinds of farming in East, West, North, and South, respectively, may now offer promising opportunity for women?
17. Make a study of the actual costs (a) per pupil, (b) per pupil hour, in each course of agriculture, and of different academic subjects in a high school, or a college.
18. Study the present vocational preferences of pupils, and also the after-career of graduates of an agricultural institution.
19. From useful, healthful home activities, draw up a definite plan for home projects.
20. Contrast the practice in the matter of home-projects in agriculture in the States of Michigan, Minnesota and Massachusetts.
21. Evaluate points of weakness and of strength in the use of agriculture by some local institution for delinquents and for dependents.
22. How can a rural survey be made of a county or district preparatory to improving systematically the conditions of rural life?

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    (*d*) The Folk High Schools of Denmark, L. L. Friend. Bulletin 5, 1914.
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    (*g*) Vocational Secondary Education. Prepared by the Committee on Vocational Education of the National Education Association. 21, 1916. Pp. 12, 16, 44, 45, 68, 153.
    (*h*) Gardening in Elementary Schools. C. D. Jarvis. 74 p. Bulletin 40, 1916.

(*i*) Agricultural and Rural Extension Schools in Ireland. A. C. Monahan, 38 p. Ill. Bulletin 41, 1916.

(*j*) District Agricultural Schools of Georgia. C. H. Lane and D. J. Crosby. 32 p. Bulletin 44, 1916.

(*k*) Rural and Agricultural Education at the Panama-Pacific International Exposition. H. W. Foght. 112 p. Ill. Bulletin 2, 1917.

(*l*) Secondary Agricultural Schools in Russia. W. S. Jesieu. 22 p. Bulletin 4, 1917.

(*m*) Educative and Economic Possibilities of School-Directed Home Gardening in Richmond, Indiana. J. L. Randall. 25 p. Ill. 6, 1917.

(*n*) Garden Clubs in the Schools of Englewood, New Jersey. C. O. Smith, Bulletin 26, 1917, 44 p. Ill.

(*o*) Institutions in the United States Giving Instruction in Agriculture. A. C. Monahan and C. H. Dye. 34, 1917, 115 p. See p. 26.

(*p*) The Township and Community High School Movement in Illinois. H. A. Hollister. Bulletin 35, 1917, 48 p. Ill.

(*q*) Vocational Teachers for Secondary Schools. What the land-grant colleges are doing to prepare them. C. D. Jarvis. Bulletin 38, 1917.

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CHAPTER VIII

EDUCATION FOR MECHANICAL INDUSTRIES AND TRADES

Difficulties in Terminology: Industries and trades; standardized definitions illustrated; vocational industrial education; industrial arts education.

Size and Variety of Major Occupational Groups; Census data; extreme differentiation of industries; outline of industries and contained occupations.

Descriptions of Trade and Industrial Schools: Vocational, industrial day schools; divisions within an industrial school; analysis of departments; the prevocational course at Lane; proportions of shop and of academic work; Worcester; Williamson, uses of spare time; principles for day industrial schools; part-time and continuation schools; continuation classes in New York City; varieties of part-time schooling; apprentice schools; general industrial school; tendencies summarized.

Problems of the Evening Schools: Evening vocational schools; European countries; the United States; distinct problems, constructive principles; the unit course defined; values weighed; the unit-course in emergency war-service; typical unit-courses; schools for miners.

Vocational Instruction by Correspondence: Strength and weaknesses; extent.

Summary. Problems. Selected References.

Difficulties in Terminology

Industries and trades. In view of different meanings current both for the word *industries* and also for the word *trades* as applied to education, the use of these two terms necessitates some working agreement upon definitions. Industrial education is the more generalized expression referring to preparation for occupations in which manual labor or skill is an important factor, while trade education denotes the more specialized preparation for specific mechanical trades, or operations. It is

doubtful whether the expression *trade education* is very useful, since *industrial education* is sufficiently comprehensive. The word *trade* in the Century Dictionary is given some ten meanings, and its etymology is confused or obscure. In secondary vocational education and in the interpretation of the Smith-Hughes Act the word trade denotes specific, skilled occupations involving manual skill, such as the machinist trades, the printing trades, the trade of pattern maker, the dressmaker's trade, trade, etc. Unfortunately coupled with this usage is the word trade in the U. S. Census used synonymously with commerce, the exchange of commodities, buying and selling.

The word *industry* similarly has more than one meaning. In a general sense it refers to almost any kind of human labor or activity. *Industrial* we use here to denote manufacture and manual activity of a productive character. However, all productive work is not predominantly manual, as witness the labor of statesmen, surgeons, physicians, ministers, writers, teachers. Examples of non-productive school work are these: Writing prefunctory themes; studying vaguely for disciplinary effect; pupils doing practice typewriting of a non-marketable nature, or students keeping books of a non-commercial character; agricultural students raising products that can not or will not be consumed; shop students making objects for exhibit or for consignment to the junk-heap, etc.

The word industrial may also refer to a *group* of trades or occupational activities, such as the metal-working industry, the iron industry, the wood-working industry, the clothing industry, farming industries, etc. The expression "industrial school," in the minds of many persons suggests only a type of reform school or an institution for defective or unfortunate persons. The U. S. Education Reports classify under this term 121 state schools which receive children committed by public authority. An industrial school is properly a school teaching some trade or part of a trade, and may include such work as carpentry,

mining, and training of teamsters, chauffers, barbers, machinists, printers, mill operatives, seamstresses, etc. Industrial schools or classes may be *day*, *part-time*, or *evening*. Schools such as the Williamson Free School supply lodging, food, clothing, etc., in addition to instruction. A review of practically all industrial schools existing at the time in the United States is found in the Twenty-fifth Annual Report of the U. S. Commissioner of Labor (15) and a similar review of industrial schools in Canada, in the report of the Royal Commission on Industrial Training and Technical Education.(31)

Standardized definitions illustrated. The Committee of the National Education Association on vocational secondary education, we have found,(40) formulated these definitions, with examples (A and B):

(A) *Vocational industrial education* includes "those forms of vocational education the direct purpose of each of which is to fit the individual for some industrial pursuit or trade." E. g., journeymen in trades and industrial pursuits are the bookbinders, carpenters and joiners, brick masons, stone masons, painters, paper hangers, plasterers, plumbers, steam-fitters. There are also more or less specialized workers, such as box makers, mill operators, tobacco operatives, etc. Large numbers of persons in such pursuits as those of carpenter, plumber, stone cutter, machinist, etc., are still trained through a system of apprenticeship.

Well-organized schools or classes, often called trade schools, are available in Boston, New York, Chicago, Minneapolis, Cincinnati and Milwaukee, for complete training, or for partial training, adjusted to the practice prevailing in the industry, e. g. for machinists, printers, engineers, electrical workers, dressmakers, milliners, etc. There are also numerous schools publicly or privately conducted for telephone and telegraph operators, linotype operators, photographers, confectioners, cooks.

(B) *Industrial arts education* signifies "those forms of training based upon industrial pursuits and designed to enhance general intelligence and give vocational guidance in the field of industrial occupations." In these schools work is often given closely allied to actual trades and industrial occupations; e. g., fine jewelry, bric-a-brac, or pottery may be produced. Frequently industrial arts education is only a name for some type of manual training. Sometimes the course is known as a prevocational course.

Size and Variety of Major Occupational Groups

Census data. In Table III, page 70, we have indicated the important occupational groups. Among these are the following large groups: *Extraction of minerals;* workers, total 964,824, male 963,730, female 1,094. *Manufacturing and mechanical* industries; workers, total 10,658,881, male 8,837,901, female 820,980. *Transportation;* workers, total 2,637,671, male 2,531,075, female 106,596. *Domestic and personal service;* workers, 3,772,174, male 1,241,328, female 2,530,846. *Public service;* workers, 459,291, male 445,733, female 13,558, including during 1910 large numbers of soldiers, sailors, firemen, engineers, mechanics. Of course, since the World War began these last occupational groups have expanded to far greater numbers. Omitting from our present consideration the workers in *agriculture* (12,659,203), *trade or commerce* (3,614,670), *professional service* (1,663,569), *clerical occupations* (1,737,053), we observe that the first five great occupational groups mentioned above contain the most persons affected directly by education for mechanical trades and industries,—about half of all gainful workers in the country, skilled and unskilled. To this number may be added about 22,000,000 of home workers not included in the Census among those engaged in gainful occupation.

A study of the above figures and of Table III, page 70, is of interest for two reasons: First, we may be enabled better to

appreciate the large variety of mechanical occupations that are encountered in the effort to conduct specific industrial education suited to the needs of workers, prospective or employed. Secondly, the sizes of the occupational group for the country as a whole, and in each local community, afford one basis, an "actuarial basis" (p. 409) for planning courses, classes or equipment when subjects are in question for the industrial school.

Extreme differentiation of industries. One should not understand from the above table that all of the different *occupations* found in industries are there enumerated. The table is in condensed form, showing only the nine great occupational groups of the Census. Advocates of a vague or general industrial education may overlook the extreme differentiation of industrial occupations, while advocates of specialized trade training may attempt the impossible in providing adequate training for any occupation presented. The extreme differentiation may be demonstrated thus: We have counted the numbers of occupational designations of the Census found only in one of the *major* occupational groups, i. e., *Manufacture* and *Mechanical.*(14) Table XV below shows the result of the enumeration. Space does not permit the printing of the specified occupations. For these in detail the reader is referred to the fourth volume of the Census.

TABLE XV

OUTLINE OF CERTAIN INDUSTRIES AND NUMBERS OF OCCUPATIONS THEREIN IN THE UNITED STATES

I

Manufacturing and Mechanical Industries in United States

	Specified Occupations
Building and hand trades	64
Chemical and allied industries—	
Fertilizer factories	20

TABLE XV—*Continued*

	Specified Occupations
Paint factories	28
Powder, cartridge, dynamite, fuse and firework factories	26
Soap factories	24
Other chemical factories	35
Clay, glass and stone industries—	
Brick, tile and terra cotta factories	37
Glass factories	61
Lime, cement and gypsum factories	43
Marble and stone yards	37
Potteries	40
Clothing industries—	
Suits, coats, cloaks, overalls	33
Other clothing factories	35
Corset factories	29
Glove factories	23
Wool and felt hats	65
Shirt, collar and cuff factories	32
Food and kindred industries—	
Bakeries	23
Butter and cheese	20
Candy factories	24
Fish curing and packing	23
Flour and grain mills	31
Fruit and vegetable canning	22
Slaughter and packing houses	50
Sugar factories and refineries	30
Other food factories	35
Iron and steel industries—	
Agricultural implements	47
Automobile factories	71
Blast furnaces and steel rolling mills	87

TABLE XV—*Continued*

	Specified Occupations
Car and railroad shops	63
Iron foundries	63
Ship and boat building	47
Wagon and carriage factories	59
Other iron and steel factories	96
Leather industries—	
Harness and saddle factories	22
Leather belt, leather case and pocketbook factories	28
Shoe factories	78
Tanneries	48
Trunk factories	22
Liquor and beverage industries—	
Breweries	36
Distilleries	28
Other liquor and beverage factories	25
Lumber and furniture industries—	
Wood box factories	32
Furniture	57
Piano and organ factories	50
Saw and planing mills	59
Other woodworking factories	55
Metal industries, except iron and steel—	
Brass mills	62
Clocks and watches	55
Coffin factories	39
Gold and silver	45
Jewelry	46
Lead and zinc	33
Tin plate	36
Tinware and enamel ware	42
Other metal factories	48

TABLE XV—*Continued*

	Specified Occupations
Paper and pulp industries—	
Paper box factories	31
Blank books, envelopes, tags, paper bags, etc.	37
Paper and pulp mills	60
Printing and bookbinding—	
Printing and publishing establishments	50
Textile industries—	
Carpet mills	52
Cotton mills	77
Hemp and jute mills	29
Knitting mills	44
Lace and embroidery	36
Linen mills	23
Rope and cordage factories	28
Sail and tent factories	18
Silk mills	50
Textile dyeing, finishing and printing mills	49
Woolen and worsted mills	72
Not specified textile industries	61
Miscellaneous industries—	
Broom and brush factories	30
Button factories	32
Charcoal and coke works	30
Cigar and tobacco factories	50
Electric light and power plants	38
Electrical supply factories	75
Gasworks	35
Oil refineries	37
Rubber factories	60
Straw factories	30
Turpentine distilleries	15
Other miscellaneous industries	68
Other not specified industries	54
Not specified metal industries	64

Descriptions of Trade and Industrial Schools

Vocational, industrial day schools. In these schools instruction is given in the day time, and so far as possible the actual conditions of the shop are given. The product is marketable, and the student performs work which is productive while he is learning the operations involved. Day industrial schools may be of the nature of high schools devoting either all or a portion of the time to trade-instruction, e. g., the Lane Technical High School of Chicago, or the Oakland Technical High School, of Oakland, California, or they may be separate public schools such as the Worcester Independent School of Trades, or philanthropic institutions such as the Wentworth Institute of Boston, the David Ranken, Jr. School of Mechanical Trades of St. Louis, or the Williamson Free School for Mechanical Trades of Pennsylvania.

The published statements of such schools describe in detail the programs, courses of study, buildings, equipment, etc. They may give either, what might be called elementary instruction in vocations for pupils 14 years of age, or also more advanced instruction for pupils 16 years of age and over, as in the case of the Lane School, or the David Ranken Jr. School of Mechanical Trades, of St. Louis, Mo., or both.

The Federal Board for the year ending June 30, 1918, gave out these facts regarding all-day vocational schools reporting in the United States.

TABLE XVI

Statistics of Trade and Industrial Schools

	Region					
	United States	North of Atlantic	Southern	East Central	West Central	Pacific
All-Day Trade or Industrial Schools	168	71	17	33	6	41
Evening Schools	300	104	24	125	12	35

Division within an industrial school. A diagram showing the possible relation of the prevocational and the practical trades courses of such a day industrial school is seen in Figure VI. This represents a plan drawn by the writer for a school of mechanical trades for boys. In any one community the group of trades taught in the practical trades department should be determined after a thoroughgoing study of the local as well as of the general problem of relating education to industry. (See Ch. XII.)

PRACTICAL TRADES DEPARTMENT

For youths 16 years of age and older

Includes: (*a*) Day classes,
(*b*) Evening classes,
(*c*) Part-time classes for workers employed.

Occupations Taught in Following:

Metal Working Division	Wood Working Division	Building Trades Division	Printing Trades Division	Operative Engineering Division

PREVOCATIONAL DEPARTMENT

For boys 14 to 16 years of age.

Gives knowledge of tools, materials, elementary shop practice, industrial organization, elementary subjects.
Does not teach a specific trade, but helps toward wise choice of occupation.
Holds and interests boys.

FIG. VI.—DIVISIONS WITHIN AN INDUSTRIAL SCHOOL

Analysis of departments. The Massachusetts Board of Education recommends that the following terms should be used to designate departments of industrial schools.(23)

DEPARTMENTS

For purposes of record, the following terms should be used to designate departments:—
1. Machine Shop Department. This includes:—
(*a*) Training all-round machinists.
(*b*) Training machine specialists.
(*c*) Training machine operators.
(*d*) Training tool makers.
2. Printing Department. This includes:—
(*a*) Training all-round printers.
(*b*) Training compositors.
(*c*) Training stone men.
(*d*) Training linotype and monotype operators.
(*e*) Training press men.
3. Factory Maintenance Department.
(*a*) Training for employment in the maintenance work of an industrial concern (millwrights).
4. Power Department. Training for employment in connection with the development or generation or distribution of power. It may include:—
(*a*) Power housework.
(*b*) Telephone work.
(*c*) Operation of boilers and engines.
(*d*) Elementary electrical wiring.
5. Electrical Department. Training for employment in the control and distribution of electrical power, which may include:—
(*a*) Training wire men.
(*b*) Training line men.
(*c*) Training telephone operatives in the maintenance department.
(*d*) Power housework.
6. Steam Engineering Department. Training for employment in connection with the care and operation of steam and gas engine plants.
7. Sheet Metal Department. Training for employment in sheet metal work, both architectural and shop work.
8. Automobile Repair Department. Training for employment in the overhauling, adjusting and repairing of automobiles.
9. Pattern Making Department. Training for employment as pattern makers.
10. House Carpentry Department. (In general outside the shop.) Training for employment in house carpentry, in occupations carried on essentially outside the shop and largely of an assembly character.
11. Shop Carpentry Department. Training for occupations in the production of articles of wood essentially carried on inside the shop, essentially productive occupations rather than assembly occupations. A department so designated could probably include:—
(*a*) Pattern making.
(*b*) General shop work.
(*c*) Specialized training on special woodworking machines.
12. Bookbinding Department. Training for occupations connected with the operation of a bindery order given to boys or girls might include:—
(*a*) Folding.
(*b*) Setting.
(*d*) Stapling.
(*d*) Binding.
(*e*) Tooling and lettering.
13. Machine Drafting Department. Training for employment in the drafting room of a machine production concern.
14. Architectural Drafting Department. Training for employment in architectural drawing offices.
15. General Education.
(*a*) Personal hygiene, occupational diseases and accidents.
(*b*) Citizenship training.
(*c*) Cultural subjects.

The prevocational course at Lane. An example of an American public school observing the distinction between prevocational day courses and practical day courses is seen in the Lane Technical School of Chicago. Here follows an abstract of the statement of the Lane program, developed under Mr. Bogan:

The Prevocational Course aims to give these boys a new start in an environment of older and larger boys, and in classes where new interests are aroused through new purposes and definite work. The administration is flexible and special opportunities are given to ambitious students who wish to pursue the same subject in more than one class. Nonessentials are eliminated and the work is especially designed for boys who wish to make up deficiencies in scholarship or to pursue special courses in shop. Individual likes and dislikes are observed and guided. Many of the boys work in upper and lower grades at the same time. Another encouragement that is offered the boy is "irregular advancement" as soon as his disposition and work show that he is outstripping his class.

The course of study serves individual as well as class needs. The shop work is diversified and so arranged that a pupil may spend a few weeks in woodshop, a few weeks at electric wiring, then turn his attention to forge or printing, and so on until he finds the particular occupation that attracts him. The course of study follows:

Mechanical Drawing	One period a day			
English	"	"	"	"
Mathematics	"	"	"	"
History, Civics, Geography (combination)	"	"	"	"
Gymnasium	"	"	"	"
Woodwork	Two	"	"	"
Foundry	"	"	"	"
Forge	"		"	"
Electricity	"	"	"	"
Printing	"	"	"	"
House Construction	"	"	"	"
Machine work	"	"	"	"

The eighth grade has four (45 min.) periods of shopwork each day. The seventh grade has two (45 min.) periods of shopwork each day.

The principles of correlation are strongly emphasized in the academic work. In mathematics the plan is to give a ready command of the principles dealing with shop and factory problems. Essential facts of industrial and civic life and research work, supplemented by the stereopticon, characterize the department of history and civic. The English department by concrete and practical methods aims to develop a sense of the unity and organization of the various industrial activities. The informality and freedom of the discussion bring out the best in the nature of the boys. There is found means of expression for the bashful and backward lad in the practical shop work whose processes he has no difficulty in discussing as a part of his exercises in his English classes.

Proportions of shop and of academic work. The schoolman who organizes trade courses for the first time may be puzzled by the practical difficulties of articulating shop work and academic work in a day school. Time schedules must vary according to climatic conditions, the ages and capacities of pupils, and the occupations taught.

Worcester. The Worcester Independent Trades School of Worcester, Mass., for boys over sixteen years of age, undertakes practical trades instruction for youths and young men. A schedule of forty-four hours per week is maintained. Figure VII below, exhibits the proportions of time devoted to academic work and shop work respectively as worked out by former Principal Fish. The formal, academic work comprises commercial

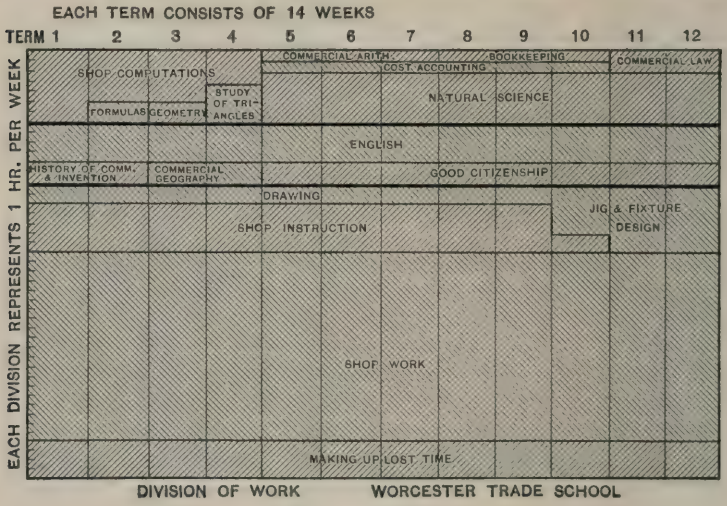


FIGURE VII

arithmetic, bookkeeping, cost accounting, commercial law, shop computations, geometrical formulas, study of triangles, natural science, history of commerce and invention, commercial geography, civics, drawing, jig and fixture design, and English. The other and the major part consists of shop instruction, shop work. Four hours per week are allotted for "making up lost time."

Williamson. Reference already has been made to the Williamson Free School of Mechanical Trades, in relation to agriculture (pp. 224). The general plan published for the divi-

sions of time spent in different departments of the Williamson School is shown in the outline below. The preponderance of time spent in shop or closely related work is to be noted.

THE ACADEMIC COURSE

WITH THE TIME SPENT IN THE DIFFERENT DEPARTMENTS IS OUTLINED BELOW

FIRST YEAR

April 1st to August 1st

	Hours per week		Hours per week
Arithmetic	3	Grammar	2
Geography—General Review	2	American Literature	2
U. S. History—Review	2	Vocal Music	1
Physiology—General Review	2	Mechanical Drawing	6
		In Shop	20

September 1st to April 1st

	Hours per week		Hours per week
Arithmetic	3	American Literature	2
Algebra	2	Vocal Music	1
Physics	2	Mechanical Drawing	6
Civil Gov't.—General Review	2	In Shop	20
Grammar	2		

SECOND YEAR

April 1st to August 1st

	Hours per week		Hours per week
Arithmetic—Mensuration	3	English Literature	2
Algebra	2	Vocal Music	1
Grammar	2	Mechanical Drawing	6
Physics	2	In Shop	20
Chemistry	2		

September 1st to April 1st

	Hours per week		Hours per week
Algebra	3	English Literature	2
Geometry	2	Vocal Music	1
Grammar	2	Mechanical Drawing	6
Physics	2		
Chemistry	2	In Shop	20

THIRD YEAR

April 1st to August 1st

	Hours per week		Hours per week
Geometry	3	Commercial Course	1
Trigonometry	3	Mechanical Drawing	8
Physics	3	In Shop	23
Chemistry	2		

September 1st to April 1st

In Shop, hours per week	43

Evening Recitations

Strength of Materials, hours per week	1½
Steam, Gas and Electricity	1½

Worcester and Williamson represent highly organized types of schools for mechanical trades with work clearly differentiated

for more mature boys preparing for definite occupations in the industries. The prevocational idea, included in the aims of the Lane Technical School of Chicago, Illinois, and of the David Ranken Jr. School of Mechanical Trades, St. Louis, Missouri, is not included in the more advanced work of Worcester and of Williamson.

Uses of spare time. In the arrangement of programs and schedules for industrial education, it should not be forgotten that the uses of spare time by students and by employees are of grave significance for both prospective and employed workers in industry. Individual or collective life reduced to a grind in behalf of a mythical efficiency is not worth much to individuals or to society, and can not endure. With the emphasis upon the eight-hour day for labor, practical idealism will not overlook the provisions for the use of the six or eight hours of leisure of the prospective or actual citizen. Healthful habits of mind and of body are the most highly desirable products of any school. Recreation is a necessity, and discrimination needs to be exercised in the matter of provisions for recreation,—whether the provisions be public, private, or commercial, or philanthropic. The right uses of spare time are problems of import to student, teacher, employee, employer, indeed to all thinking persons.

Principles for day industrial schools. There are those who believe that practically all adolescents should remain in school until eighteen years of age, and that such attendance would promote both individual and economic or social welfare. We are constantly faced with the fact, however, that the majority of persons who enter industry do so earlier than the age of eighteen, most of them with limited elementary education, and without skill, and immature. There is evidently need of day vocational schools for those who will enter industry early, although an all-day industrial school can seldom teach a full trade. Experience shows, however, that it can do much to prepare boys and girls over fourteen years of age for entrance into

the trades and to minister both to their vocational and also their civic needs.

The Committee on Vocational Education of the National Education Association recognizing this need endeavored to safeguard the operation of the all-day industrial school by suggesting principles or standards by which they may be safely established and conducted. These principles are twelve in number, as follows:

In these schools a close relation must be maintained between theory and practice. Practical shopwork must be supplemented by related studies in English, civics, industrial history and geography, and elementary mathematics, as well as by the science and mathematics underlying the trades. In this way the school will make for intelligent citizenship as well as for superior workmanship in the years to come. Shop conditions must be approached as nearly as possible in the school, and in general the following conditions should be met in the school:

1. Not less than one-half the time of the pupil should be given to actual shopwork, including such calculations and shop drawing as may be necessary to bring the projects of the pupils in the shop to successful completion.

2. The shopwork must be conducted on a productive or commercial basis as distinguished from the ordinary manual-training method of handling pupils in the shop.

3. The instruction must tend to become individual as distinguish from group or class instruction.

4. The shopwork must be carried on as nearly like the work done in a first-class commercial shop as conditions will permit.

5. The results of the pupils' work should be useful articles which can be utilized in the school system or have a market value.

6. The assignment of work to a pupil in the shop should be by projects or jobs.

7. The progress of the pupil through the shop and school should be measured by the projects or jobs which he has completed in a satisfactory manner.

8. The classroom instruction in the related academic subjects, such as arithmetic, drawing, and science, should be closely connected at

every possible point with his shoproom experience in order that it may be of immediate practical value to the pupil.

9. Every day industrial school should plan for at least a one year's course and for not more than a four year's course.

10. Every year's work should, so far as possible, be a unit unto itself. Each year's work should be organized and administered in a way that would confer upon the pupil a definite value in vocational training, so that if he should leave the school at the end of the year the instruction could be used by him as a tool in trade for better wage earning.

11. Not less than three (60–minute) hours should be devoted each day to actual shopwork. The school session should not be less six nor more than eight hours, not counting the recess and noon periods.

12. So far as feasible, instruction should be given in English, history, civics, and other appropriate subjects which would tend to make the pupils self-helpful, intelligent, and worthy citizens. The end of the vocational school should not be merely to produce a technically competent workman, but a *citizen of the State* who seeks not only to advance his own welfare through his work, but who is ready and willing to place his efforts at the service of his community and State.(40)

Part-time and continuation schools. These schools or classes are attended for a limited number of hours per week, or during alternate weeks, by persons who also are employed in industrial shops. Part-time vocational schools are particularly intended for students from fourteen to eighteen years of age for whom an arrangement has been made for the gaining of practical experience in some industrial establishment. The coöperative plans now in operation in New York City and also in Cincinnati are examples of the part-time system.

The continuation school is intended for the improvement of workers regularly employed in industry. It may be either (a) a trade extension school which gives instruction or practice directly related to the daily occupation of the pupil, or (b) a trade preparatory class, which helps toward a new occupation. The actual content of courses given to workers in continuation or

improvement class varies widely, from the elements of reading and arithmetic to specialized trade and technical knowledge and skill. Continuation classes are found in railroad shops, factories, manufacturing plants, and department stores. In this country they are an outgrowth of experience showing that evening instruction is not very profitable for working children under or about sixteen years of age. In New York City a company usually furnishes equipment and the Board of Education the supplies. Hours of instruction vary from three to ten per week. In some cases the classes meet one hour per day; in some there are two-hour sessions twice a week; in some, two hours daily five times a week. With few exceptions the pupils are employees of the company. In nearly all cases the company pays the workers for full time occupied in class attendance. The following exhibit from the Superintendent's Report gives a brief statement of continuation classes in New York City, under supervision of the Board of Education. (Table XVII, pp. 256–257).

The term "continuation school" in America is often used comprehensively or loosely to indicate any kind of education undertaken by people employed. In this sense continuation schools embrace apprenticeship education, part-time education, evening schools, correspondence schools, university extension, etc.

Varieties of part-time schooling. The continuation school is, of course, a variety of part-time schooling in which the industrial or commercial training predominates. Part-time schooling has developed in many forms. Young people employed are released for regular periods, either certain hours per week, or sometimes alternate weeks, in order to obtain, either in shop or in other schools, instruction and practice related to their occupations. Some continuation schools aim to utilize the continuation period of instruction only to further general education, rather than to promote direct mastery of processes,

TABLE XVII

Name of Firm	Location	Borough
(1) Abraham & Straus	420 Fulton St.	Brooklyn.
(2) B. Altman & Co.	5th Ave., 34th St.	Manhattan
(3) Hotel Astor	Broadway, 44th St.	Manhattan
(4) B. & O. R. R. Co.	Clifton, S. I.	Richmond.
(5) H. Batterman Co.	Broadway	Brooklyn .
(6) Bedford Co	1055 Broadway	Brooklyn .
(7) Hotel Biltmore	Madison Ave., 43rd St.	Manhattan
(8) Bloomingdale Bros.	3rd Ave., 59th St.	Manhattan
(9) Bronx House	1637 Washington Ave.	Bronx
(10) Bush Terminal	Building No. 7, 34th St.	Brooklyn .
(11) P. F. Collier & Son	416 West 13th St.	Manhattan
(12) Educational Alliance	197 East Broadway	Manhattan
(13) J. B. Greenhut & Co.	18th St., 6th Ave.	Manhattan
(14) R. Hoe & Co.	504 Grand St.	Manhattan
(15) Kops Bros.	120 East 16th St.	Manhattan
(16) Frederick Loeser Co.	482 Fulton St.	Brooklyn .
(17) L. I. R. R. Co.	Morris Park, L. I.	Queens.
(18) Lord & Taylor	5th Ave., 38th St.	Manhattan
(19) R. H. Macy & Co.	Broadway, 34th St.	Manhattan
(20) Hotel Majestic	72nd St., Central Park West	Manhattan
(21) Manhattan Hotel	Madison Ave., 42nd St.	Manhattan
(22) Hotel McAlpin	34th St., Broadway	Manhattan
(23) James McCreery & Co.	5 West 34th St.	Manhattan
(24) Metropolitan Engineering Co	1250 Atlantic Ave.	Brooklyn .
(25) A. I. Namm & Sons	Fulton St.	Brooklyn .
(26) N. Y. Butchers' Dressed Meat Association	39th St., 11th Ave.	Manhattan
(27) Public School 4	176th St., Washington Ave.	The Bronx.
(28) Richmond L. & R. R. Co.	Livingston, S. I.	Richmond.
(29) Rothenberg & Co	34 West 14th St.	Manhattan
(30) Sherry's	44th St., 5th Ave.	Manhattan

or technical operations. In the practical administration of part-time day schools pupils either spend a specified number of hours of a day or week both in the school and also in the industrial establishment, or by means of alternating teams of boys, a pair or group of pupils is one week in the school, while the corresponding group is in an industrial establishment.

Examples of continuation schools of various kinds are found in New York, Illinois, Indiana, Wisconsin, Massachusetts, Pennsylvania, in fact in nearly all of the great cities of America,—as New York, Boston, Cincinnati, Fitchburg, Cleveland, Minneapolis, San Francisco, Portland, Seattle, etc. The continuation school idea was developed remarkably in some European countries before the World War. E. g., the continuation schools of Munich under the direction of George Kerschensteiner have

CONTINUATION CLASSES IN NEW YORK CITY, 1915–1916

Business	Classes	Hours per Week	Subject	Register of Classes					Total	
				M.*	W.*	Boys	Girls	Jrs.**		
Department store	1	7½	C. B. (1)	...	22	...	23	...	45	(1)
Department store	2	15	C. B.	1	11	17	...	23	52	(2)
...	1	8	E. F. (2)	...	44	...	5	...	49	(3)
Machine shop	2	8	Trade (3)	33	...	18	...	2	53	(4)
Department store	2	10	C. B.	3	53	5	29	...	90	(5)
Department store	1	7½	C. B.	1	21	...	...	...	22	(6)
...	1	8	E. F.	...	40	...	6	...	46	(7)
Department store	2	10	C. B.	...	43	...	28	...	71	(8)
Social settlement	2	20	E. F.	16	138	...	...	...	154	(9)
Manufacturing	2	15	C. B.	...	...	2	4	66	72	(10)
Publishers	1	10	D. S. (4)	...	17	...	10	...	27	(11)
Social settlement	4	36	E. F.	130	56	6	5	...	197	(12)
Department store	1	7½	C. B.	...	...	...	...	97	97	(13)
Printing machinery	4	33	Trade	45	...	84	...	...	129	(14)
Corset manufacturers	1	5	E. & T. (5)	7	8	4	3	5	27	(15)
Department store	2	10	C. B.	...	42	...	25	25	92	(16)
Machine shop	2	8	Trade	33	...	31	...	1	65	(17)
Department store	2	10	C. B.	...	2	6	27	26	61	(18)
Department store	1	10	C. B.	...	39	...	40	...	79	(19)
...	1	4	E. F.	30	...	...	...	...	30	(20)
...	1	4	E. F.	37	10	...	...	...	47	(21)
...	1	4	E. F.	...	79	...	4	...	83	(22)
Department store	1	5	C. B.	...	...	...	48	...	48	(23)
Machine shop	2	8	Trade	34	...	39	...	...	73	(24)
Department store	2	10	C. B.	...	16	...	4	130	150	(28)
...	1	4	E. F.	30	...	...	...	...	30	(26)
...	1	4	E. F.	70	2	1	...	...	73	(27)
Power plant	1	4	Trade	80	...	...	...	...	80	(28)
Department store	2	8	C. B.	2	34	3	6	1	46	(29)
Restaurant	1	4	E. F.	27	23	...	...	...	50	(30)

* Over 18 years of age. ** Under 16 years of age. (1) Common branches.
(2) English to foreigners. (3) Trade subjects. (4) Domestic science.
(5) English and textiles.

been upheld frequently as models of efficiency and of adaptation to local industrial needs compatible with good citizenship. In England continuation education found development in extensive systems of evening schools. The National Government has assisted these schools by generous grants. In America much of the continuation work in cities has been of the evening school type, and a great variety of continuation work is being done.

Part-time schooling (except in the sense of home projects, etc.) is not adapted to elementary education because of the tender age of the elementary pupils. With regard to the alternating-team plan of part-time industrial education, wherein one

group or individual is in the shop while a paired group or individual is in the school week by week, union labor has objected on the ground that the system trains two persons for each job. Employers or foremen have objected to the alternating system because it may cause disorganization of shop routine and waste of materials.

Apprentice schools. In the endeavor to provide a substitute for apprenticeship manufacturers in some instances have organized under private management apprenticeship and coöperative industrial schools.(26) Frequently large firms or corporations have maintained the apprenticeship schools, the general plan of which is to train a boy in actual shop work and at the same time to give necessary instruction in mechanical drawing, mathematics, etc. As a rule each pupil or indentured boy is required to attend the school, which is situated in the works, during a certain number of hours per week. He is paid for his time, the wages being increased about every six months, if he makes good progress. The coöperative industrial school offers through a combination of employers what the apprenticeship school offers through the efforts of a single employer or corporation.

Objections to these private enterprises for industrial education are numerous, notwithstanding some excellent results that have accrued. Such schools have enlarged opportunity where regular public schools have failed in some localities. Foremen and employers have objected to part-time plans because interrupted work and readjustments of shop schedules cause bother and loss. Employers have sometimes abandoned private efforts to train employees because competitors who do not put forth such efforts reap the fruit by employing the former pupil-workers. A serious objection alleged is that such schools are too much under the domination of employers, or of employers' interest; that the schools may give apprentices only a highly specialized training making for high efficiency in the employers'

establishment, but for practical uselessness elsewhere, and for lack of adaptability or resourcefulness.

Objections to the privately controlled continuation school, as well as scarcity of skilled labor, higher wages, competition for workers, etc., have brought new impetus to the continuation school controlled by public school authorities. In many states employers, employees, and educators working in coöperation are developing new types of continuation schools and part-time schools. Wisconsin, Massachusetts, New York, Illinois, Indiana, Pennsylvania, Iowa, and other states have developed continuation and part-time schools. These may be found notably in our large American cities,—New York City, Boston, Philadelphia, Chicago, Minneapolis, Rochester, Milwaukee, Cincinnati; also in Springfield, Mass., Bridgeport, Conn., Dubuque, Iowa, Centralia, Illinois, etc., under the auspices of the public schools.

General industrial school. There are cities of less than 25,000 inhabitants which can not advantageously establish a specialized trade school, for there may not exist local opportunities for employment of all who are trained in such a school. This fact, and the provision of the Smith-Hughes law which allows state boards to modify the conditions of industrial schools have created a demand for a "general industrial school." Kelly has endeavored to show that an inviting opportunity exists in the general industrial school to develop a type of vocational training that will help boys of the small city toward industrial success whether they work at home or go abroad.(18) The Federal Board has offered these constructive suggestions concerning the general industrial school:

> In planning the course of study for such a school, it is necessary to make a careful study of all the industries of the community, to pick out certain ones which offer the greatest opportunities, and to endeavor to give more training in each of these, with the aim of picking out from the different occupations such common elements as may exist. The

instruction will be as specific as possible with the equipment and diversified aims, but will necessarily seek for common interests upon which to base its development. For example, in practically every trade or industrial pursuit a knowledge of drawing as related to that pursuit is advantageous, and the common element in the drawing of different industrial occupations is considerable. Consequently it is possible in the general industrial school to give a course in mechanical drawing which will prove of considerable value to the students who take it, no matter what industry they enter. It is true also, that the skill acquired in handling tools in any school shop will carry over to some extent into several occupations. A unit trade school will undoubtedly give more efficient instruction in any one trade, but by careful selection a teacher may sift from the unit trades various skilled processes that depend somewhat upon a basic ability of the worker to use his hands and his head for mechanical production.(11c)

Tendencies summarized. Rapid changes during recent years render impracticable any sweeping statement regarding the present or future development of continuation and part-time industrial education. The Massachusetts Board of Education set forth during 1915 certain conclusions, after reviewing events since the historic report of the Massachusetts Commission on Industrial and Technical Education. They are of interest as having been written in the calmer years before our entrance into war:

1. Consideration of the pertinent facts regarding the needs and the employment of minors fourteen to sixteen years of age results in the following:—

(A) The evident trend of industry is to exclude the fourteen to sixteen year old minor from skilled industry. These minors are forced to enter employment as unskilled workers.

(B) There is an increasing demand that the compulsory period of education be raised to sixteen years.

(C) Many of the group of minors from fourteen to sixteen years of age find that economic necessity demands that they contribute to their own support; they must find some remunerative employment.

(D) The regular school is not organized to meet the special needs of the group of minors who would be kept in school should the compulsory age be raised.

(E) Permissive legislation will not result in many municipalities taking advantage of the present continuation school law.

(F) Four hours a week for two years is not long enough for continuation school pupils to secure adequate results. It is, however, all that we should demand at this time.

(G) Three types of educational opportunity should be furnished in continuation schools:—

a. General education.

b. Pre-vocational education (for choice of a calling).

c. Vocational education (for training in the chosen calling).

2. Consideration of the ways and means of improving the conditions set forth in these conclusions leads us to make certain definite recommendations.

(A) That State-wide compulsory continuation schools should be provided for all employed minors of fourteen to sixteen years of age.

(B) That employed minors fourteen to sixteen years of age should be required to attend a public continuation school for four hours a week.

(C) That the best results will be secured from compulsory continuation schools when the opportunity for attendance is continuous throughout the year, or at least for forty-eight weeks.

(D) That unemployed minors fourteen to sixteen years of age who have left the regular public schools and are temporarily out of employment should be required to attend the compulsory continuation schools for the full session of such schools each day during their unemployment.

(E) That municipalities having a population of 50,000 or more should be required to maintain the three types of schools referred to in conclusion (G), and that all other municipalities should be permitted to maintain these three types of schools.

(F) That municipalities having a population of 10,000 and less than 50,000, and having not less than 50 employed minors fourteen to sixteen years of age, should be required to maintain general improvement continuation schools.(23)

Problems of the Evening Schools

Evening vocational schools. One feature of value in evening schools is the greater adaptation to the needs of individuals and of the community than is usual in conventional day schools. Such schools may offer instruction in (1) general elementary or secondary courses; (2) industrial, commercial, and professional courses; (3) informational and cultural subjects.

European countries. Evening schools are found in many countries. In England, the first evening schools probably were private schools. In the eighteenth century the Society for the Promotion of Christian Knowledge recommended "masters and employers to appoint some hours in the evenings of certain days of the week to teach such grown persons to read as had neglected to study."(16) Enlargement of the humble beginnings has continued until the present day through the stimulus of economic pressure, recognition of needs, and influence of gilds, and by parliamentary acts and grants. By the Code of 1905 the subjects of the night schools were grouped in six divisions: (1) Preparatory and general; literary and commercial. (2) Art. (3) Manual. (4) Science. (5) Home occupations and industries. (6) Physical training. In France the evening schools have constituted an important part of the continuation schools. The classes are divided into: (1) *cours d'adultes*, classes for illiterates; (2) *cours complementaires*, continuation classes; (3) *cours techniques*, technical classes. It is said that the evening schools in Germany owe their origin to the establishment, as early as 1569, of Sunday-schools for teaching religion to youths. Lessons in reading and writing afterwards were added. Gradually this instruction was given on week day evenings as well, and until the majority of such schools became evening schools. They constituted before the war an important part of the general system of industrial education in Germany.

United States. In the United States private and endowed institutions have contributed tremendously to the practical education of workers, e. g., such as the Ohio Mechanics' Institute of Cincinnati (1878); New York Trade School (1881); Pratt Institute of Brooklyn (1877); Drexel Institute of Philadelphia (1891); Carnegie Technical Schools of Pittsburg (1900); Virginia Mechanics' Institute of Richmond (1905); Franklin Union of Boston (1905). The William Hood Dunwoody Industrial Institute of Minneapolis (1914). The Young Mens' Christian Association and the Young Womens' Christian Association have done pioneer work in the establishment of evening schools. The greatest development, however, has been in the public schools. The public evening schools now reach: (1) Those deficient in the rudiments, whether they be foreigners or Americans; (2) young workers who have had elementary or high school training and who desire to continue their education, whether for (a) college entrance, (b) greater proficiency in commercial, (c) technical, (d) trade work; (3) men or women in business who desire special help along special lines, e. g., salesmanship, commercial law; (4) household arts courses, e. g., for young women in industry.

Distinct problems. The problems of evening schools are numerous and distinct. There is the matter of fatigue, physical and mental, which leads some investigators to question the pedagogical or hygienic value of instruction given to tired workers coming from labor in industry. It is agreed that night school work is not suitable to boys and girls under 16 years of age, if indeed to those under 18. Qualifications of teachers are not standardized, there being a great variety of men and women employed, such as young lawyers, architects, engineers who are supplementing a meagre income and who have no idea of becoming professional teachers, regular teachers from high or elementary public schools, already weary from a day's work, tradesmen and journeymen, skilled in industry but without

pedagogical and cultural education. Poor or irregular attendance is a common trouble. E. g., in Minneapolis during 1914–1915 out of 457 students enrolled in evening industrial classes, 107 remained less than five nights after paying one dollar for books and materials. In the commercial classes 94 out of 786 remained, and in domestic science and art 219 out of 1,242 remained. "Apparently, many left the work from disappointment as to instruction," says the Minneapolis Survey. Especially poor was the showing of elementary instruction in the trades to mixed groups.

Constructive principles. Certain aspects common to well-conducted evening vocational classes have been emphasized constructively, as follows: (1) Vocational courses are most effective when placed under the supervision of a competent vocational director. (2) Qualifications of teachers should include (a) sufficient knowledge of trade, (b) good manners, and good appearance, and good English, (c) health, (d) character, (e) ability to teach and organize. (3) Adequate illumination, ventilation, and hygenic standards are necessary. (4) Standard reporting or record systems should be used. (5) Regular attendance should be encouraged by useful adaptation of the work in hand, appeal to interest and personal coöperation, and requirement of a small deposit from the pupils. (6) Pupils should be carefully grouped according to aim, occupation, age, experience, and factors determining a homogeneous group. (7) Evening classes should be small. (8) Short, unit courses are desirable for vocational instruction in evening schools for mature workers.(27)

The unit-course defined. In the fields of industrial, homemaking, and agricultural education, short courses, each complete in itself and dealing with a teachable phase of a trade or other occupation, have been worked out. The unit-course is defined as an "intensive form of training and instruction intended to meet in a limited number of lessons a specific need of a particular group of workers."

Short unit-courses are not intended to be short-cuts to a superficial knowledge of a trade, but rather, devices for meeting the special needs of workers already employed. The courses are given as trade-extension work in part-time and evening schools. The great variety of employments, as well as of individual capacities, makes difficult any plan for imparting trade instruction to workers in the mass. The short unit-course has proved successful in reaching many groups of individual workers. A bulletin of the U. S. Bureau of Labor Statistics thus classifies the groups needing unit-courses:

(1) Specialized machine hands, who while running one machine desire to learn the operation of another. E. g., a planer hand is enabled to operate a universal grinder in the Newton, Mass. Trade School.

(2) Skilled workmen who desire to meet new or recent demands of their trade. E. g.: A piano tuner is enabled to learn the mechanism of the player piano in the Murray Hill Evening Trade School, New York City.

(3) Operators or workers in low-grade skilled and unskilled occupations, where there are "best ways of doing things," "tricks of the trade," or special information not available in the shop. E. g.: The training of chocolate dippers in the school of a candy factory.

(4) Workers on special jobs desiring to prepare for promotion. E. g.: A cleaner or finisher in the dress and waist industry who desire to become an examiner or inspector. In a furniture factory of Grand Rapids, Mich., a rod maker desires to become a cabinet maker, and may be helped to this end in the evening trade school.

(5) Skilled workers who can be persuaded only to take brief and direct courses. E. g.: Courses for steam engineers, 40 lessons each, in the industrial school at New Bedford, Mass.(33)

Values weighed. The disadvantages in unit-courses are numerous. For instance, a student may be led to believe falsely that in a small number of lessons he is "learning a trade." Suitable teachers are difficult to find and to retain. Some may hold in contempt the apparent absence of cultural elements in courses giving specific facts or definite skills.

The advantages potential in well-conducted unit industrial courses are numerous, and, in substance, are thus summed up by the Bureau of Labor Statistics:

1. The work completed is an asset to individual and to employer.
2. The time of the pupil is economized.
3. Conditions for admission are, nature of worker's need, his probable ability to profit by instruction,—rather rigid, academic tests.
4. The weakness of general evening schools,—the deplorable dropping out of pupils during a long course, is avoided. The unit is small, a specific thing is to be done, and the instruction to this end is organized and complete,—facts which tend to hold the pupil.
5. Series of unit courses in the same subject, experience shows, tend to interest the pupil to go on after one course.
6. Content of the course is first determined by going to the industry, and specific needs of individuals are also considered at registration.
7. Short units are especially adapted to the mature worker, who is likely to know what he needs.
8. Chaotic conditions in some evening industrial schools are supplanted by classification of aims.
9. Unit systems enable the school to discover new groups to be served.
10. Unit courses are flexible. A well-rounded training may be approximated by taking enough unit courses.

The flexibility of the unit system as compared with a regular school course is thus illustrated by grouping the letters A, B, C, and D.

If the letters A, B, C, D represent progressive steps in the usual school course, there is only one point at which the pupil can enter;

that is at A. If he wishes to enter at C he must pass an examination in A and B.

If these letters each represent a unit course, it is seen that by the flexible organization of these units, a pupil may enter at any position of A, B, C, or D for the desired instruction, and still, if he wishes, complete an entire course equal in practical content to the regular school course.

A B C D
B C D A
C D A B
D A B C (33)

The unit-course in emergency war-service. The critical need of thousands of mechanics, technicians, and Army workers, brought into remarkably rapid and satisfactory development types of unit courses. War-emergency courses were not strictly trade courses in the sense that they prepared men for occupations as carried out in civil life, but were intended to be short, direct courses of instruction to help fit men to meet specific demands of operations and processes carried on under war conditions. The demands and requirements might or might not approximate the requirements of similar work in civilian occupations. The Federal Board for Vocational Education issued a series of bulletins outlining a wide range of such courses, e. g., for training conscripted men for service as radio and buzzer operators (No. 2); for emergency training in ship-building (No. 3); for motor-truck drivers and chauffeurs (No. 7); for machine-shop occupations, blacksmithing, sheet-metal working, pipe fitting (No. 8); for electricians, telephone repairmen, linemen, cable splicers (No. 9); for gas-engine, motor-car, motorcycle repairmen (No. 10); for oxy-acetylene welders (No. 11); for air plane mechanics, engine repairmen, woodworkers, riggers, and sheet-metal workers.

Typical unit-courses. The bulletins referred to above contain outlines of emergency unit-courses comprising a small

volume. A bulletin of the U. S. Department of Labor contains outlines of typical courses that have been given in many American cities. A complete enumeration of the cities employing unit courses is impracticable. Instances are as follows: New York City, Boston, Philadelphia, Chicago, Minneapolis, St. Louis, San Francisco, Seattle, Rochester, N. Y., Albany, N. Y., Newton, Mass., Worcester, Mass., Scranton, Pa., Williamsport, Pa. Many of the industrial courses of the Young Men's Christian Association in scores of cities are unit courses, consisting of from five to twenty lessons. The reader who may be unfamiliar with the use of the unit-system of instruction or with the nature of the industrial subjects thereby made subjects of organized teaching, will be interested in the following enumeration of varied unit courses, indicated here in order to illustrate the wide range of the work. These courses were in operation before the outbreak of the World War. It will be understood that each title or subject barely enumerated below refers usually to a group of courses,—e. g., *carpentry*, includes five different unit courses, and each course in turn may contain from one to twenty lessons.

Farming: Orcharding, general cropping, truck farming, grape growing, small fruit raising, poultry keeping, dairying, swine raising, sheep raising, horse husbandry.

Furniture making: Stock and machine work, cabinetmaking, finishing, courses for designers, machine men, stock keepers, foremen, prospective foremen, clerks, spindle carvers, pattern makers, filers and sharpeners, carvers, upholsterers.

Cabinetmaking: Courses for foremen, journeymen and apprentices, including blue-print reading, drawing and layout, estimating, millwork, assembling, finishing.

Painting: Courses for foremen, journeymen and apprentices, including estimating, paint composition, color harmony, fresco, staining, graining, finishing.

Pattern making: Courses for foremen, journeymen, and apprentices. Drawing, sketching, foundry practice, tools, materials, glue and gluing, types of patterns, sweeps, etc.

Carpentry: Stair building, inside finish, roof framing, drawing and mathematics, house framing.

Wood mill work: Courses for foremen, journeymen, and apprentices. Window-frame, sash, door frames, wainscot making, etc.

Plumbing: Courses for foremen, journeymen, and apprentices. Drainage, ventilation, joint wiping, water systems, estimating, blue-prints, etc.

Sheet-metal work: Drafting, shopwork, drawing and mathematics.

Steam engineering: License work, arithmetic, boiler-room chemistry, steam plant management, gasoline engines.

Steam fitting: Courses for foremen, journeymen, and apprentices, high-pressure work, traps, condensers, pumps, regulators, valves, pipes, low-pressure work.

Machine drafting: simple, complex, assembling, gears, freehand sketching, etc.

Machinist's trade: Shop practice, machine-shop mathematics.

Blacksmithing: Courses for foremen, journeymen, apprentices.

Practical electricity: House installation, branch exchange installation, central office installation, central energy installation, intercommunicating systems, electric lighting; sig-

nal men and electricians—including armature winders, repair men, switchboard construction men, etc.; linemen and power-plant men, etc.

Stone and granite cutting: Courses for firemen, journeymen, and apprentices. Monument design, lettering, geometry applied to stone cutting, drawing, molding, etc.

Terra-cotta work: Architectural drafting, model making.

Concrete construction: Courses for builders, draftsmen, inspectors, field men, clerks, including materials, principles, steel reinforcement, specifications, designing, tests, cost data, etc.

Estimating: For general building construction estimators, contractor's clerks, etc.

Mining: Courses for mine firemen, mine steam engineers and mine workers. Boilers, steam engines, pumps and air condensers. Practical electricity and electrical machines. Mine gases, mine ventilation. Timbering, haulage, pumping. Mine calculations. Reports and accounts.

Show-card writing: Courses for journeymen and apprentices, in handling and care of tools, mixing and blending colors, preparation of surfaces, use of "lettering pencil," practical lettering, etc.

Proof reading and copy editing: Theory, practical work.

Printing: Courses for foremen, journeymen, and apprentices in make ready, register, ink, papers, cost systems, composition, cutting stock, design, punctuation, spelling.

Player-piano-action mechanics: Courses for repair men and workmen. Player-action construction, installation.

Cotton manufacturing: Carding and spinning, warp preparation and weaving, designing.

Boot and shoe manufacturing: Pattern cutting and clicking, fitting and machining, sole-leather cutting, lasting and attaching, finishing, last making and pattern cutting, clicking and closing, machine operating, design, management, etc.

Nursing: Courses for trained attendants.

Cooking: Courses for housekeepers. General, and for nurses.

Domestic economy: For housekeepers, for mothers in feeding and care of infants and young children.

Millinery: Courses for makers.

Sewing for domestic use: Underwear, waists, skirts, neckwear, etc. For mothers—baby clothes, small children, etc.

Dressmaking: For dressmakers. Tailoring, waist draping, waist making, costume design, drafting and pattern making.

Power-machine operating: Felling, hemming, gathering, tucking, two-needle tucking, button-hole machine operating, embroidery machine, hemstitch-machine, two and three and five needle machine operating.

Waitress work: Care of dining room, washing and ironing table linen, setting of table and serving, care of pantry, carving, personal appearance.

Janitor work: Cleaning, repairs, fire escapes, heating systems, gas, electric bells and elevators, tools, telephones, sanitation, water supply, air shafts, roofs, care of mail, telegrams, relationships, renting, etc. *Laundry chemistry:* Courses for foremen and workers. Water, alkalies, solvents, bleaches, drying, starch, dyes, textiles, etc. (33)

Schools for miners. An important group of industrial workers not to be overlooked are the miners. Vital to the community and to himself is it to safeguard and increase the miner's productiveness, his health, his earnings, his social well-being. The Royal Canadian Commission on Industrial and Technical Education devoted considerable attention to this matter. Professor Harry H. Stoek has arranged in useful form the facts and principles underlying industrial mining education, and also has compiled useful data regarding actual practice in this phase of education both in America and in many foreign countries.(38) This difficult but important field of industrial education demands renewed effort upon the part of all concerned. The

studies of the Bureau of Labor Statistics afford an introduction to the processes and occupations in mining.

Vocational Instruction by Correspondence

Strength and weaknesses. The efficiency and economy of the modern mail service has made possible a remarkable development in correspondence schools. Pupils of such schools may reside far from the institutions, and instruction is carried on by correspondence. In a few instances institutions provide a "correspondence instructor,"—a travelling teacher who meets periodically groups of pupils in a community in order to supplement the explanations given by correspondence. Usually all instruction is given through the mails by means of printed outlines, specially prepared text-books, directions, suggestions, etc., and pupils are required to submit reports and answers in writing. The precision and fullness required in the responses are advantages inherent in the correspondence method. Thousands of individuals have greatly profited by correspondence instruction and industry consequently has been helped by improved efficiency. Exceptional workmen who can not attend regular sessions of a college or university are enabled to study under expert direction. Courses are taken either for general self improvement, or for special purposes related to certain trades. The courses are of extraordinary variety and range.

The disadvantages of the method are numerous. The student must work alone without the stimulus of personal help. Explanations demanded must be made by the laborious method of correspondence. Where college instructors are subsidized by extra fees to correct papers, etc., the work adds extra burdens interfering with regular instruction and likely to be performed perfunctorily. Some collegians are prone to look upon the correspondence instruction as superficial. Laboratory guidance and equipment are lacking. The informality, accessibility, and popularity of the courses have made it possible for scores of

semi-fraudulent institutions run for gain to flourish under the name of correspondence schools. One needs only to read the extravagant claims set forth by expensive advertisements to understand both the unworthy character and also the possible monetary gains of certain private, correspondence-school enterprises.

Extent. Systematic instruction by correspondence probably grew out of the university extension movement beginning in England in 1868. President William B. Harper of Chicago University during and after 1892 did much to stimulate correspondence instruction in America. To-day many American universities carry on the work—notably Chicago, Wisconsin, Nebraska, and California. The enrollments, in correspondence courses of these universities are: Chicago 5,000 (1916); Wisconsin 10,000 (1916): California 3,399 with 42 lecture centers (1915). It is said that one private correspondence school has had an enrollment of a million and a half pupils during twenty-five years, although reliable statistics from private concerns are difficult to obtain. Correspondence schools that advertise widely often make extravagant promises. The educational and industrial surveys of late conducted in American cities disclosed numbers of workmen who send money away for correspondence instruction. This is a matter of significance for two reasons: First, workers who choose to follow correspondence courses are likely to represent a select, ambitious class who often are worthy of help in public, trade-extension courses to be offered locally; secondly, the aggregate sums of money sent out from a community for fees, etc., often far exceeds the sum needed to support adequate classes at home with laboratory equipment and personal instruction.

Summary

Before we discuss still further the problems of education for mechanical industries and trades, we may pause to enumerate

by way of summary the five groups of problems which we have presented so far.

1. The necessity of standardization of terminology in this field is pressing. Vocational industrial schools, and courses and industrial arts schools or courses are distinct in aim, although overlapping in content and method.
2. If we combine into one great classification the workers in manufacturing and mechanical industries, in extraction of minerals, in domestic and personal service, and in public service—these combined groups contain most of the workers to be affected directly by trade and industrial training, and their number comprised even before the war one half of all gainful workers in the United States. This great number is exclusive of the 22,000,000 home workers who are not classified by the census as "gainful workers." The field of appropriate vocational education for this great host is exceedingly broad.
3. The student should understand the functions and aims of the different kinds of classes and schools operating in this field, such as: *Prevocational school, day industrial school, part-time school, unit course, night school, continuation school, apprentice school or class,* and *general industrial school.* The organization and the work of these types of school are fluid and changing in these years of rapid development, and the need of adjustment to individual and to community should always prevent them from becoming static.
4. The evening schools, both academic, and mechanical or industrial, in character, present peculiar problems owing to the adult age of the students, their frequently specific demands for instruction to supplement their occupational efficiency, and because of the limitation of hours and strength. The unit-course—the short, intensive treatment of a topic complete in itself, is of singular value in evening

work. Some of the features of the "project" method of teaching can in some instances contribute to better instruction in unit courses in trade subjects.

5. Instruction in correspondence for increase of knowledge and skill has helped many a handicapped toiler. Probably millions of dollars are sent away from home by workers to correspondence schools—money which could have bought locally more practical instruction. Instruction by correspondence has points both of strength and of weakness when administered with best intentions toward the learner.

The Smith-Hughes Act has given more impetus to trade and industrial education of sub-collegiate grade than any other one piece of legislation. In the continuation of this subject in the next chapter we shall refer to the provisions of this law as affecting education in mechanical industries and trades.

Problems

1. Give reasons why lines of demarcation should be drawn between vocational industrial education, and industrial arts education. Examples of each kind in your community?
2. Distinguish between trade education and the more general meaning of industrial education.
3. From different standpoints show that the processes of *learning and of doing* occur together. Discuss, from (a) pedagogical, (b) ethical, (c) philosophical points of view.
4. Explain what is meant by a *project* in industrial teaching?
5. Contrast the proportions of shop or practical work in the Worcester schedule with the original requirements of the Smith-Hughes Act.
6. Make a systematic study of the uses of each hour out of twenty-four hours during one week for each member of

a high school group. Devise a carefully drawn blank for this purpose and obtain coöperation of pupils.

7. If possible, make a similar study of a group of industrial workers.
8. Classify the wholesome uses of spare time open to different age-groups, and the sexes, in your community. Compare commercial, philanthropic, and public provisions for recreation.
9. In local plants ascertain by first-hand study probable proportions of time needed in continuation schools for technical, general, and practical training respectively, for given occupations and for workers of different ages and abilities.
10. Contrast the effects of the German system where the parent is likely to decide the occupation of the boy at about ten years of age, with our own elastic and opportunity-affording schools. See Beckwith, Roman, Cooley, Judd.
11. Ascertain how much money goes annually from your community, or even from the employees of one large plant, for correspondence instruction.
12. Ascertain the actual attendance in the different kinds of vocational industrial schools of your community or city.
13. Where unskilled or semi-skilled service is demanded in manufacturing plants, to what extent shall specialized instruction be given by public schools? E. g., in garment, tobacco, chewing gum, tin-can, cotton, packing, canning industries, etc.
14. To what extent and how can training for foremanship be organized? Consider with reference to particular industries.
15. To what extent shall specific industrial training be given to girls who will spend from one to seven years in industry, after which they will take up home-making?
16. Describe any mechanical occupations intermediate between

those of the graduate professional engineer, and those of a trade nature with practical training predominant.

17. Procure from the reports on evening schools of New York City a description of the unit-courses now being given in the night schools of that city. Ascertain also what courses of a similar type are being offered by the public schools of your own community. Investigate the question of the adjustment of such unit-courses to meet the actual needs of your own community. Does the New York list of unit-courses afford you any valuable suggestions? Obtain also a similar list or description of courses from Milwaukee, Wisconsin.
18. With the consent of the management, procure definite information from the workers in a large manufacturing plant with regard to their present or past enrollment in correspondence schools, the amounts paid, and the benefits actually received. Ascertain from employees and from unions through personal visitation what courses or subjects are desired for public evening schools in your community.

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CHAPTER IX

EDUCATION FOR MECHANICAL INDUSTRIES AND TRADES—*Continued*

The Smith-Hughes Act; Applications to Industrial and Trade Education: Significance; provisions and policies; entrance requirements for all-day industrial schools; distinguishing between all-day and part-time schools; meanings of "nine months," "hours," "productive basis;" work other than shop work; age-limits in evening industrial schools; time basis for half-time work; kinds of work in part-time courses; subjects in evening schools; small cities conditionally exempt.

Other Aspects of Industrial and Trade Education: The rehabilitation of disabled soldiers, and of workers from industry; education of women; disposition of products; cost-records; production versus exercise; accidents and injuries, a three-fold problem—first aid, prevention, legal aspects.

Questions about Teachers and Methods: A weak point; types of instructors; selection and training; methods of teaching; the phase method; the project in trade and industrial education; project-routing; Allen's contribution; an analysis; detailed lesson; centers for teacher-training; participation of universities.

Summary. Problems. Selected References.

The Smith-Hughes Act; Applications to Industrial and Trade Education

Significance. The perspective disclosed in preceding pages showed the historical significance of the Smith Hughes Act. It is probably the most potent action ever taken by public authority in order to promote education in the trades and industries in which so large a proportion of our wage-earners engage. Table X on page 185 exhibits the sums of money appropriated by the Federal Government to the States for coöperation in this work—the first sum being $500,000 in 1917–

18, and finally the sum of $3,000,000 to be appropriated in 1925–26 and annually thereafter. The moneys thus appropriated are to be duplicated at least once in each instance by the States, so that actually large sums are in prospect for the promotion of education in trade, industrial and home economics subjects. (E. g., Smith-Hughes Act, Sections: 1, 3, 6, 8, 9, 11, 12, 14.)

Provisions and policies. The mandatory provisions of the Act, and also the published policies of the Federal Board in the matter of discretionary interpretations and applications are of interest to students and schoolmen, and all citizens. The Federal Board for Vocational Education has also published answers to special questions relating to industrial education, the answers constituting at least tentative statements of policies of the Board. Here follows the substance of some of these interpretations.(13)

(a) *Entrance requirements for all-day industrial schools.* Section 11 of the Act provides:

> . . . That such education shall be of less than college grade and shall be designed to meet the needs of person over 14 years of age who are preparing for a trade or industrial pursuit or who have entered upon the work of a trade or industrial pursuit. (Sec. 11.)

While a minimum age of fourteen is the age requirement in the Smith-Hughes Act, the Federal Board recommends that care be taken to secure pupils who are physically and mentally able to do the work required. While neither an absolute nor a uniform standard as to educational qualifications can be fixed, experience shows that pupils failing to make normal progress in the regular schools rarely do satisfactory vocational work. Ability to do the work of the all-day industrial school should be the determining test even after admission. A probationary period of attendance will enable the school to determine the boy's or girl's real ability. Communities maintaining all-day vocational schools should offer full opportunities to all capable

boys and girls, and should see to it that such schools do not become the resort of the undesirable, the feeble-minded, or the physically weak.

(b) *Distinguishing between all-day and part-time schools.* Section 11 also provides:

> That such schools or classes giving instruction to persons who have not entered upon employment shall require that at least half of the time of such instruction be given to practical work on a useful or productive basis, such instruction to extend over not less than nine months per year and not less than thirty hours per week. (Sec. 11.)
>
> . . . That at least one-third of the sum appropriated to any State for the salaries of teachers of trade, home economics, and industrial subjects shall, if expended, be applied to part-time schools or classes for workers over 14 years of age who have entered upon employment. (Sec. 11.)

Where pupils work alternately in a class or school and in a privately owned shop, the determining factor is whether the pupils, when in such shop, are entirely under the supervision and control of the school. If they are, it is an all-day school. If not, it is a part-time school. This is true regardless of the fact that the pupils are, or are not, paid. The final test is whether or not the shop work is carried on independently or as an integral part of the school.

(c) *Meanings of "nine months," "hours," "productive basis."* These terms occur in Section 11 of the Act. The Federal Board's interpretation requires a day industrial school to be in session during nine months of four weeks each, regardless of the calendar months, and including only such holidays as are observed by the regular public schools. By "hour" is meant a period of sixty minutes, the "clock hour" being intended rather than that shorter recitation or study period sometimes called by schools an "hour." "Useful or productive basis" is interpreted to mean work similar to that carried on in the particular trade or industry taught. Such work is on a useful or productive basis

when it results in a product of economic value comparable with that of a similar product made by a standard shop or factory.

(d) *Work other than shop work.* In an all-day industrial school arises the question of what work other than shop work may be included in the "industrial subjects," for which teachers may be paid in part from moneys under the Smith-Hughes Act. The Federal Board answers that the State Board must be satisfied that such work is inherent in the vocation taught in the school and is a subject which enlarges the trade knowledge of the worker. For example, in a machine-shop school which gives at least three hours a day to shop work, a part of the remaining time might be given to such topics as machine-shop mathematics, drawing as related to the machine-shop trades, science applied to the machine shop, and the hygiene of the trade. In a school which teaches printing time devoted to related studies might be given to such subjects as estimating costs, English for printers, art in printing—such as the layout of a paper, proper margins and title pages, science as related to printing, and hygiene of the trade. Before such work in related subjects can be paid for from Federal funds, the State Board must be satisfied that the teacher has had satisfactory contact with the vocation to which the related work is supplementary.

(e) *Age limits in evening industrial schools.* Section 11, requires

> . . . That evening industrial schools shall fix the age of 16 years as a minimum entrance requirement. . . . (Sec. 11.)

In this provision Congress has specifically prescribed 16 years as the requirement, and therefore a State may not prescribe a higher age (e. g., 18 or 20) as the minimum requirement. The Federal Board interprets the requirement as mandatory and consequently if Federal funds are to be used to aid States in conducting education in schools of this character, such schools must be open to persons of 16 years and over.

(f) *Time basis for half-time work.* The effect of the provision in Section 11 relating to at least half of the time of instruction to persons who have not entered upon employment to be given to practical work, etc., was thus construed by the Federal Board. The provision is twofold in effect:

(1) It required that at least one-half the time given to instruction shall be devoted to practical work, irrespective of the number of hours per week required of students; (2) it established a minimum period of instruction. These requirements are in no way connected, but are, on the contrary, separate and distinct, and each must be given full force and effect. Consequently in cases where it is proposed to conduct schools for a longer period than the minimum prescribed by the Act, the half-time for practical work must be based on the number of hours during which the school operates.

(g) *Kinds of work in part-time courses.* The Federal Board has not undertaken to define generally the many varieties and types of part-time schools and classes which may be entitled to federal aid under the Act. Section 11 contains the provision:

> . . . That at least one-third of the sum appropriated to any State for the salaries of teachers of trade, home economics, and industrial subjects shall, if expended, be applied to part-time schools or classes for workers over fourteen years of age who have entered upon employment, and such subjects in a part-time school or class may mean any subject given to enlarge the civic or vocational intelligence of such workers over fourteen and less than eighteen years of age; that such part-time schools or classes shall provide for not less than one hundred and forty-four hours of classroom instruction per year. (Ibid.)

The interpretation of the Federal Board, however, held that Federal moneys might be used to pay the salaries of teachers employed in those part-time schools or classes where wage-working boys or girls receive any or all of the following benefits:

(*a*) Increased skill or knowledge in the occupation which the wage-worker is following.

(*b*) Skill or knowledge leading to promotion in the industry or calling wherein the wageworker is engaged.

(*c*) Improvement in the knowledge of regular subjects which the wageworker did not complete in school.

(*d*) Increased civic or vocational intelligence.

(*e*) Skill and knowledge in home economics for girls employed as wageworkers.

In general any part-time school must be in session during a part of the working time (day, week, month, or year) of its pupils; while an evening school or class must be in session outside the regular working hours of its pupils.

. . . The number of aims or benefits which the school or class is to undertake should be governed by the number of hours available for instruction; and pupils should be so grouped and taught as to deal definitely with one aim at a time. Preferably, the aims should be few to insure effective results; and care should be taken not to attempt inconsistent or conflicting aims with the same pupils. For example, a part-time class, having but four hours per week for instruction, should not attempt for any given group more than two of the above aims as a maximum. (Ibid.)

(h) *Subjects in evening schools.* Section 11 provides:

. . . That evening industrial schools . . . shall confine instruction to that which is supplemental to the daily employment.

The Federal Board interpreted this to mean that evening instruction "can be given only in such subjects as will increase skill or knowledge in the occupation in which the worker is engaged as his daily employment, or such as will lead to promotion or advancement in that work. The time available in an evening school is so short that it is impossible to teach a skilled trade to anyone unless he is engaged in daily work affording him opportunity to apply the skill or knowledge gained in the evening school, or unless the daily employment gives an experience which will enable the worker, with the knowledge or skill acquired in an evening school, to secure promotion in that occupa-

tion. The work can be most effectively given when workers in similar or allied occupations are grouped together."

(i) *Small cities conditionally exempt.* Section 11 also contains this important provision regarding education for trade, home economics, and industrial subjects:

> That for cities and towns of less than twenty-five thousand population, according to the last preceding United States census, the State board, with the approval of the Federal Board for Vocational Education, may modify the conditions as to the length of course and hours of instruction per week for schools and classes giving instruction to those who have not entered upon employment, in order to meet the particular needs of such cities and towns.

Other Aspects of Industrial and Trade Education

The rehabilitation of disabled soldiers, and of workers from industry. In another place we have referred to the matter of industrial and trade education utilized in behalf of two general groups: Disabled soldiers, and workers maimed by accident in industrial occupation. The condition of the men who, having served the country and humanity upon the battlefield, return disabled—blind, or mutilated, or prostrated, suffering from shock, and sick—presents a pathetic appeal that stirs any patriotic citizen. However, to rehabilitate these men has not been merely a matter of humanitarianism. It has been an economic necessity in order to lessen dependence, invalidism, pauperism. It should open up new fields of employment to many men who have lacked occupational opportunity; it should increase self-respect and personal joy of living. We have just awakened also to the necessity of rehabilitating the thousands who are injured in industrial plants or upon railroads. Practical and social aspects of this great work have compelling fascination but can not be included in the present chapter.

Education of women. The problems of industrial and trade education for girls and women are in many respects the problems

we have already presented. Special issues appear in the field of women's occupations and in the institutions erected to meet the individual and social needs of the girl or woman employed. A brief consideration of some of these special problems will comprise the content of another chapter.

Disposition of products. When a product of an industrial school is used for the benefit of the public there should be a diminution of the net cost of the school to the taxpayer. Products that could be made economically under skilled trades instructors for the public school system and with educational advantage to the boys are such as these:

Printing of all kinds in large quantities.

Furniture, for teachers, officials, pupils

Supplies for schools.

Additions, repairs, furniture, etc., for schools.

Repairs to electric bell and school telephone systems.

What to do with the products of the labor of students in a trade or industrial school is a problem for consideration. Usually the small amount of products of the trade school does not enter largely into the business of a city. Several methods of disposing of articles made have been in vogue. For example:

(1) Consignment of product to junk-heap; obviously wasteful.

(2) Making things for oneself; articles are limited in character, practice is expensive to school; may develop a selfish rather than altruistic school spirit.

(3) Sale in open market, in school sales-room.

(4) Sale on special orders.

(5) Exchange of service with factories where articles made by boys for factory are exchanged for new school equipment, such as lathes, etc.

(6) Repair work, as plumbing, electrical work, etc., done in

public schools by students under the supervision of a competent man.

(7) Manufacture of articles for use of public schools, such as desks, chairs, tables and printing for the public schools.

In this matter it should not be lost sight of that to overemphasize the value and amount of the product rather than the good of the boy or girl is fatal to the aim of true education. In some schools, under private auspices, children have been actively exploited in the production of goods, under the guise of education.

In considering the question of the disposition of products made from raw materials in a trades school it should be ever remembered that the "boy is the most important product." Industrial efficiency in the school must not be obtained at the cost of the pupils' development.

Cost-records. Modern industries utilize record-systems that indicate the actual costs in time expended, unproductive labor, materials, etc., for every finished product. It is clear that a school related to actual industrial and commercial conditions, must give place to the study of cost-record systems and to practice in the use of such devices. Students should know well both the uses and the abuses of the cost-record system in actual industry.

Production versus exercise. Manual training often based upon the academic idea of "general mental discipline," "transfer of skill gained by special practice," "development of the senses," etc., is still offered sometimes in the place of productive, vocational courses. In order that an industrial course may be truly vocational, it is necessary for it to duplicate actual shop conditions. Nevertheless, the possible evils of the commercial shop must be avoided, and it is ever to be remembered that "the boy is the most important *product* of the shop."

Lewis H. Carris has prepared a tabulation intended to ex-

press in parallel columns, the differences between the commercial shop and the school shop conducted on a productive basis. It is as follows:

PRINCIPAL DIFFERENTIATING CHARACTERISTICS—

OF THE COMMERCIAL SHOP IN BUSINESS	OF THE SCHOOL SHOP CONDUCTED ON A USEFUL OR PRODUCTIVE BASIS
1. Money-making enterprise.	1. Educational enterprise.
2. Considers maximum of profit.	2. Considers maximum of educational values.
3. Keeps man on special process to secure maximum output. Production.	3. Keeps student on special process only until skill in special process is sufficient to warrant advancement.
4. Has usually no primary interest in providing variety of experience.	4. Tries to give a complete round of experiences.
5. Aims at production of goods.	5. Aims at production of skill.
6. Marketable product is the primary aim.	6. Marketable product is the secondary aim, but necessary to give adequate training.
7. Interest in materials.	7. Interest in human beings.
8. Individualistic interests.	8. Society interests.
9. Serves private capital.	9. Serves state.
10. Immediate profit.	10. Future welfare.
11. Concerned with competition.	11. Not concerned with competition.(22)

Accidents and injuries, a threefold problem. The question of accidents in industrial schools has three aspects: (1) First aid to the injured; (2) preventive and protective measures; (3) liability and compensation.

First aid. Even in a crowded curriculum, place should be found for competent instruction of teachers in such matters as emergency treatment of hemorrhages, simple and compound fractures, sprains and dislocations, poisonings; foreign bodies in

skin, eye, ear, nose; burning clothing; fainting, shock, epilepsy, hysteria, etc. The need of immediate and competent medical help should be emphasized in emergency work.

Prevention. Administrators, executives, teachers, and pupils should be acquainted so far as possible with modern preventive measures. Safety devices providing against accident from wheels, belts, shafting, electricity, dust, etc., are of necessity in the efficient industrial plants of to-day. Standards of illumination and ventilation should be understood and observed. Of value also is instruction in swimming, diving, the transportation of the injured, management of fires, handling and storage of poisons, avoidance of street accidents from cars and automobiles.

Legal aspects. Instances of accidents caused variously by personal negligence, unprotected machinery, or from wrong action or attitude of officials or boards, give rise to the question of liability and compensation. Decisions in such instances will depend upon the laws and statutes applicable in the various States, and especially upon the specific facts in a case.

The following is a legal opinion concerning accidents in industrial schools, published by the Massachusetts State Board of Education:

(*a*) It would seem that in the event of an accident there would be no liability upon the Commonwealth or upon the State Board of Education, acting as an instrumentality of the Commonwealth within the scope of the duties imposed upon it by law, since the Commonwealth is not liable for torts.

(*b*) There would seem to be no liability upon the city or town by which the school was established and in which it was maintained.

(*c*) For accidents resulting from negligence there would probably be a personal liability upon the part of the person directly responsible, unless such accidents resulted directly from the negligent official action of a board or public officer, in which case it is doubtful if there could be a recovery. Where the action of the Board or public officer is

proper and within the scope of the public duty imposed upon them or him, and the agent to whom the order is directed is negligent, there would be no liability upon the board or officer who gave the order.

In general, the question of liability for accidents of the character described must ultimately be a question of fact to which the general principles above outlined may be applied, and should probably be determined in each case upon the specific facts of that case.(11)

Questions about Teachers and Methods

A weak point. The advancement of the program for better industrial education has been in spite of the marked scarcity of teachers who combine personal qualifications, special skills, practical experience in industry, scholarship, and acquaintance with essentials of school management and methods of instruction. Suitable personal qualifications, plus practical experience, and skill in occupation, necessarily have been given preference in the choice of vocational teachers. It was a wise provision of the Smith-Hughes Act which demanded provisions for training teachers to be made by the States as a first prerequisite for gaining Federal coöperation.

A reading of the recent discussions of Messrs. Carris,(22) Myers,(12) and Snedden,(18) reveals a determined effort to think out means of efficient teaching in industrial education, but at the same time indicates the immature and unsatisfactory status of teacher-training provisions for industrial instructors.

Types of instructors. The term *teacher* may include directors, supervisors, principals, heads of departments, instructors. All of the teachers in a vocational industrial school of course need not be strictly vocational instructors. A classification of such instructors comprises three groups:

(a) *Vocational instructors.* Those, in shop, farm, or home, who teach shop work, technically related work, or both.

(b) *Technical instructors.* Those who teach technically related subjects, as sciences, drawing, mathematics.

(c) *Non-vocational instructors.* Those who teach non-vocational subjects, as English.

The following types of instructors may give instruction in schools or classes maintained in part by federal funds under the Smith-Hughes Act:(22)

1. Teachers of shop subjects in the all-day, part-time, or evening school classes where instruction is limited to a particular trade.
2. Teachers of shop subjects in general industrial schools and in part-time schools when the shop work is of a general or elementary character.
3. The related subjects teachers in the all-day, part-time, or evening classes.
4. Teachers of non-vocational subjects in part-time schools or classes.

Selection and training. A conference of state executives during 1916 recommended certain findings concerning the selection and training of teachers for state aided industrial schools. The recommendations embody a development of recommendations originally prepared by C. A. Prosser and W. A. O'Leary for the National Society for the Promotion of Industrial Education. The recommendations of the conference comprise almost a compendium upon this debatable subject. Space permits here only a brief condensation of some of the important findings, which we embody in the following paragraphs (a, b, c, d).

(a) *Qualifications of Teachers.* Industrial school teachers should be required to possess definite and clearly defined qualifications. Trade teachers should be masters of their craft; technical teachers should have trade experience and adequate technical knowledge; and non-vocational teachers should have special training in the subjects they are to teach and at least a layman's understanding of the trade and the industrial processes taught in the school. Every instructor should know how to teach and should possess satisfactory personal and educational qualifications.

(b) *Certification of Teachers.* New plans of certification are needed. Because of the difference between the qualifications necessary for regular school teachers and those required of teachers in industrial schools, existing plans for the certification of regular public school teachers cannot be satisfactorily used for industrial schools. No scheme of certification can be of permanent value that is not based upon accurate knowledge of the requirements for teachers and a state-wide uniform plan for estimating the qualifications of applicants. In most existing plans written examinations, together with credentials of one sort or another, are the basis upon which certificates are granted. Officials in charge of the certification of industrial school teachers may well recognize these means of testing applications, but a much more thoroughgoing examination than that now given teachers in elementary and high schools is essential. The state should be the sole certificating authority. . . . The aim of state certification is to establish minimum standards. Certification by the state does not create an obligation on the part of local authorities to hire or retain any particular holder of a certificate.

(c) *Training of teachers.* The entrance requirements for admission to training classes should be carefully determined. The same care in choosing students should be exercised as the best trade schools give to the selection of their pupils. Only those persons should be admitted to training classes who give promise of the qualifications necessary for successful teaching service. Justice to these prospective teachers as well as the economic use of public money requires that they should not be permitted to give their time to special preparation at public expense for service for which it is obvious that they are not fitted. No person should be accepted who does not possess at least the minimum of personal qualifications as to health, personality, etc., which the state authorities require for the certification of teachers.

The training given teachers for industrial school service will generally be of two types: Short courses like evening or part-time classes where the instruction must necessarily be confined to the one problem of giving the pupils an introductory teaching equipment; and longer courses such as could be given in more extended part-time classes or in an all-day school where it is possible to give more thorough teaching equipment as well as supplementary preparation in such things

as technical knowledge, additional practical experience, industrial, social, and civic contracts.

Training should be given all teachers before they enter school service and also after they begin employment.

The most promising plan for training shop instructors at the present time is the evening introductory training course for skilled trade workers having the personal and trade qualifications. After finishing an evening course these men and women should serve as assistant or pupil teachers in an industrial school. . . .

The best scheme for securing teachers of related subjects will be one which will draw men and women of actual trade experience. Every effort should be made to attract skilled trade workers to evening or part-time classes giving preliminary training for teaching. When persons having no practical experience are employed as technical teachers, industrial and trade contacts must be given them as part of their training. These teachers should have in general the same after-training in the service as that recommended for trade teachers.

Teachers of non-vocational subjects might be trained best in the state normal schools. This means that the normal school must organize separate departments and assume the responsibility of providing suitable instructors who understand the peculiar teaching required in industrial schools. So far as it is possible for a school to do so the normal schools must furnish the outside contacts which will give their pupils a sympathetic understanding of the problems of industry and the worker. After entering the service, non-vocational teachers as well as trade and technical instructors should have probationary experience and further professional training.

(d) *Control of Training Courses.* The control of all state-aided classes for the training of industrial school teachers should be conferred by legislative authority upon the board or committee in charge of industrial education. Non-state-aided classes should be controlled through the certification of teachers by the same body.(14)

Methods of teaching. Instruction in industrial subjects does not yet embody a well-developed technic. Formalism, cut and dried "pedagogy," have little place in live industrial education, which must ever change. Some of the principles

and facts stated elsewhere in this book refer in a general way to good instruction. Difficult is the task of guarding the content of instruction so that the three results may be secured for every young pupil; namely, (1) *skill* in a selected occupation; (2) *knowledge* related both to that occupation, and also to culture; (3) *ideals* of personal and civic welfare. The efficient processes to be followed in securing these three aims in their respective details, will comprise the basis of a technic of instruction for industrial schools.

The phase method. By this method of organizing instruction the progress of the pupil is based upon *ability* to meet the conditions of the next phase, rather than upon a grading measured by *time*. For example, here follows three phases illustrative of such organization in Massachusetts:

Phase I.—Trying-out phase (all shop period).

(*a*) Doing the job without introducing complications of any kind.

(*b*) Carrying out a series of single projects in which planning and related study are carried out in their logical order and in the shop.

Phase II.—Period of close correlation emphasis on good shop work (shop and class room time evenly divided).

Carrying on more than one project and not necessarily carrying out each subject in logical order.

Phase III.—Period of intensive shop and technical training (shop and class room time evenly divided, with correlation not closely made).

Mastery of a series of organized subjects of instruction on the one hand, and the training and the ability to work under purely productive conditions in the shop on the other.(11)

The project in trade and industrial education. In the consideration of agriculture we have already referred to (p. 220) possibilities in the use of the "project method." The unit course (p. 264) affords interesting possibilities for the development of projects in industrial education. The Massachusetts State Board suggests a combination of the *phase* and of the *project* methods, as follows:

In the simplest sense in which the term can be used, a project is a job, or it is something involving the discharge of a responsibility on the part of a pupil. The project method of instruction in vocational education is a plan of instruction combining growth in manipulative skill on a shop, farm, or home job with growth in power to apply the related technical knowledge (drawings and mathematics) of the job.

The project method of instruction, as a method of instruction best calculated to train for power to use and apply information, is suggested for vocational schools, rather than instruction on independent subjects arranged in series and courses organized in logical progression, and chiefly valuable as a method of imparting information.

The project method of instruction involves the following activities on the part of the pupil:—

(*a*) Determining the conditions to be met in doing the work.

(*b*) Planning how to meet these conditions in terms of materials, operations, and suitable equipment.

(*c*) Preparation of this material in conventional form (operation sheet, drawing, etc.).

(*d*) Performing such calculations as may be necessary (figuring cost, amount of stock, cutting speed, amount of feed, etc.).

(*e*) Carrying out the job according to specifications.

A combination of the project method of instruction with the phase scheme of grading is recommended as calculated to give the most efficient vocational education. (ibid.)

Project routing. Management involving checking, inspecting, and routing of a pupil through a series of projects is desirable. The specific requirements must be carefully planned and accomplishments recorded systematically. It is a problem to manage this adequately, and at the same time not to kill initiative and spontaneity in the pupil.

One simple form of project routing-card shows the following:

(*a*) The elements of the projects. (*b*) The operations called for in each particular project. (*c*) The inspection for each operation. A

very definite progressive project control, combined with an inspection report and the perpetual inventory of the pupil's educational conditions at the close of the given project, is an essential part of the project method of instruction.

The use of such a card is intended to cover the following points: (*a*) To place a definite responsibility on the instructor for the assignment of work. (*b*) To furnish an accurate record of the work actually carried on in connection with each job. (*c*) To place a definite responsibility upon the instructor for accepting such work as may be asked for. (ibid.)

Allen's contribution. Endeavoring to avoid the unnecessary use of "abstract theory," in favor of practical methods, the contribution of Charles R. Allen marks a unique and forward step in the pedagogy of instruction in trade processes. A worker of long practical experience in training industrial teachers, Allen wrote his system as an immediate result of his supervision of training courses for one thousand ship-yard instructors, under the Emergency Fleet Corporation during the years of the War. The book deals with the three factors in efficient production—the instructor, the man and the job. Scientific students of education unacquainted with industrial life will find the book a source of information and suggestion. The book tells better how to produce *trainers* quickly than to produce all-around *teachers*. In education for increased production trainers of men in specific processes are, of course, a necessary part of modern industry. The methods set forth for instruction in efficiency production are schematized by Allen and are illustrated. For example, here follow two samples, one (A) of one of Allen's schemes of analysis, the other (B) showing in some detail one of his lesson plans.

(A) *An analysis.* In the following tabular arrangement Allen sets forth the four instructional operations in teaching a specific job, for example, *heating and driving hot rivets.*

THE ANALYSIS

	Development	Informational
Step I. Preparation. Foundation.	The suggestive question. Demonstration. Illustration. Experience.	The informational question. Demonstration. Illustration. Experience.
Step 2. Presentation. Putting over.	Demonstration. Illustration. Experiment.	Demonstration. Illustration. Lecture.
Step 3. Application. Checking up.	On the job. Discussion. Recitation. Written Test. Examination.	On the job. Recitation. Written Test. Examination.
Step 4. Inspection. Final Test.	On the job. Recitation. Examination.	On the job. Recitation. Examination.

(B) *Detailed lesson.* Now comes an example of a detailed lesson used by Allen in such work as that done for the Shipping Board. The job is *heating and driving hot rivets.*

STEP I. PREPARATION

First Idea. (A rivet.)

1. Have you ever seen a rivet?
2. Can you tell a rivet from a bolt?
3. Did you ever see any riveting?
4. Is a rivet alike at both ends?
5. Is a rivet round or square?

Second Idea. (A hot rivet.)

1. Could you pick up a rivet that you found lying around the yard?
2. If you saw a rivet on top of a hot stove would you try to pick it up?

3. Why would you take a chance in picking up the first rivet but not on picking up the second?
4. Could you tell a very hot rivet from a cold rivet without touching it?

Third Idea. (A rivet heated enough.)

1. Can a rivet be heated to different heats?
2. Would it make any difference what heat a rivet has, provided it is hot?
3. Hasn't the heater boy got to know somehow when the rivet is at the right heat? How does he know when a rivet is just hot enough?

STEP II. PRESENTATION

First Point. The rivet must be at a certain temperature to work right. (Memo. Head up cold and hot rivet.)

1. Which rivet takes the most time to head up?
2. Which rivet, hot or cold, makes the best head?
3. If you were paid for the number of rivets driven, which would you prefer, cold or hot rivets?
4. If rivets with well finished heads only were accepted, which would you prefer, hot or cold rivets? (Memo. Drive an over-heated rivet.)
5. Does this rivet head up right?
6. Would you rather be paid for driving over-heated, or properly heated rivets?

Second Point. (The appearance of the rivet varies with the heat.)

1. Can a rivet be too cold for the job, or too hot for the job? (Again head up an under-heated rivet and an over-heated rivet, directing the attention of the boys to the appearance of the rivets when they are taken from the fire.)
2. Could you see any difference between the two rivets?
3. Could you pick out an under-heated rivet? An over-heated rivet?
4. How would you do it?

Third Point. (The rivet must be just under a "scaling" [white] heat.) (Memo. Head up a properly heated rivet.)

1. Has this rivet worked right?

2. Could you tell a rivet that would work right from one that is under-heated or over-heated by looking at it?
3. How would you pick out a properly heated rivet?

Step III. Application

(Memo. Place rivets in fire.) Have each boy pick out correctly heated rivets, meantime asking such questions as are suggested below, of the other three boys.

Bill, Pick out a correctly heated rivet.
Sam, Did he do it?
Jack, How do you know he did it?
Tom, You pick out a rivet.
Jack, You watch him.
Sam, Pick out another one.
Bill, That wasn't right, was it?
Jack, Pick out a burnt rivet.
(Memo. Carry on work of this kind until satisfied each boy knows a properly heated rivet.)

Step IV. Testing

(Memo. Proceed to rivet and say:)

Now I'm going to riveting and am going to use each of you boys in turn as a heater boy to pass me ten rivets. If all ten are at the right heat I'll O. K. you to the foreman for a job. Go to it, Sam. You other three fellows don't mix in, give him a show. You'll get your turn. Watch me rivet.

Use of Other Methods.—Other methods *entirely unsuited for* teaching a lesson of this type, and one of which would probably be selected by a poor teacher, but which a good teacher would never use for this sort of lesson, are illustrated in this paragraph. Had the informational line of approach been selected, the questions in Step I would have been so framed that the answers would require no thinking by the boys. . . .

If the recitation method were used in Step III the instructor would be prepared with a set of "cross examination" questions, such as,—Must a rivet be heated at the right temperature?

How can you tell an over-heated or under-heated rivet, etc. (in-

formational approach), or, by the (developmental approach), "Why isn't an over-heated rivet just as good? Why isn't an under-heated rivet just as good?" etc.

By the examination method a few questions selected at random would be given. Under either approach the instructor would, by giving additional information or suggestive comment, straighten out any points he found needing it.

If the lecture method were used the instructor would proceed somewhat as follows: "You boys have seen a rivet, you know that rivets may be heated and that the rivet heater has to know when a rivet is at the right heat. In doing this he goes by the color. If the rivet is red hot it is too cold, if it is too hot it scales, so the way to know a rivet at the right heat is to pick out one that is just under a good white heat, but not to let it get so hot that it scales."(1)

Centers for teacher-training. Snedden complains that "already a number of cities have made the absurd mistake of assuming that *instructors* in technical knowledge are much more important men than *trainers* in industrial skill, and are paying the former much larger compensations." Whether for the preparation of instructors or trainers, questions arise about the best location of teaching centers for these purposes, and about the relative uses of existing institutions—normal schools, engineering colleges, technical high schools. The advantage of proximity of such centers to industrial areas seems clear; the relative values for the purpose of the three types of institutions, not so plain.

The majority of normal schools are apart from large industrial centers, and are patronized chiefly by girls preparing to teach in elementary schools. The same writer observes: "It is doubtful whether more than a very small part of the general normal schools of America can advantageously develop training departments for industrial school teachers. In the more naïve stages of reflection on this subject, we are apt to infer that 'a teacher is a teacher' and that any institution devoted to the

training of one type of teachers can readily adapt itself to the training of another type. More analytical study, however, will show that the training of different types of teaching must be differentiated, if anything, more widely than the forms of educational service, considered in terms of objectives, for which these teachers are being trained."

Participation of universities. It is probable that any definition of necessary qualifications of the different types of teachers will undergo constant revision in the direction of higher requirements. The sudden growth of industrial education lower than college grade has made imperative the employment of persons new to teaching, and the lack of adequately prepared industrial instructors has sometimes forced the acceptance of compromise measures, both in lower schools and in university training courses.

Colleges of engineering connected with state universities are also, most of them, remote from city life. Some of them provide industrial teacher-training courses in centrally located industrial centers, as in Wisconsin, Indiana, Michigan, and Illinois. Snedden says: "The pedagogical influence of the engineering colleges on the standards and methods of industrial teacher-training will probably not be good for several years, or until some very definite prescriptions are established by state and national authorities. Typical engineering schools are institutions for *technical* instruction as distinguished from *vocational* training. Only lately and reluctantly have they come to appreciate the importance of *practical experience* obtained under educational supervision, as a necessary part of integral vocational education. The University of Cincinnati now provides definitely for the acquisition of such practical experience. Several other colleges do so in a half-hearted way through summer camps, compulsory service in mines, etc."(18)

In some cities there are found technical high schools, as in Oakland (California), Chicago, St. Louis, Cleveland, Boston, and

New York. Some of these institutions possess space and equipment which could be adapted for additional vocational courses, day and evening.

An opportunity exists to utilize more fully the departments and schools of state universities for mutual betterment. Most of these probably would find it possible to maintain a teacher-training division within a city. Schools of education, engineering, agriculture, and commerce merit a share in the training of young men and women, both in the principles of vocational education and also in the adjustment and supervision of well regulated experience in shops and industries and in laboratories looking toward the acquisition of specific skills. The University of Cincinnati, Columbia University, and the Universities of Indiana, Illinois, and Wisconsin are examples of institutions which have begun such work.

As a rule, the universities are better equipped with shops, laboratories, and farms, for this kind of activity than are normal schools, but to accomplish it, certain academic notions of prerequisites must be altered in ultra-conservative places where professors and petty executives are more interested in college entrance units and the perpetuation of favorite courses, than in the adjustment of state institutions to meet the needs of larger proportions of our population. It will be a mistake also to continue to admit to university faculties men of inferior intellectual capacity and inadequate industrial training as "professors of industrial education," if such men are to become permanent leaders and expect attention in their effort to modify or to reorganize university life. Encouraging symptoms of vigorous, competent leadership are manifest in several state universities.

Summary

1. The Smith-Hughes Act until the year 1917 was the most far-reaching law ever passed in the United States affecting

directly sub-collegiate education in the mechanical trades and industries. The measure stimulated all-day schools, part-time schools, and evening schools, and rapid constructive work was accomplished in the cities of two score States within a short time. The federal officials in extending cooperation have provided helpful and protective rulings and explanatory literature to authorities in the States.

2. Numerous new problems and difficulties arise to challenge the best thought and the energetic efforts of advocates and administrators of industrial education. Examples of such questions are: The vocational rehabilitation of the disabled, those from war, and those from industry; the problems peculiar to the industrial education of women; questions about commercial production, disposition of productsl made during training; the medical, preventive, and legal aspects of the industrial accident.
3. Especially difficult and new are questions about *instruction*—the selection, the training, and the methods of teachers. Distinctions need be made between *trainers* of men for specific jobs and *instructors* of elementary or of technical subjects. Scrutiny and trial need be made of the methods of trade and industrial instruction now variously advocated, i. e., the *phase*, the *project*, the analysis of *steps* of production with demonstration and practice as by Allen. The choice of institutions and of their locations—whether they be normal schools, technical high schools, or universities is a matter which calls for local adjustment in order to meet the radically different demands of practical trade and industrial instruction.

Production and distribution, making and selling are perhaps becoming more unified in industry and commerce. However, somewhat distinct from the occupations of the *makers* of things in mechanical trades and industries are the *sellers* and *ex-*

changers of commodities. A great number of occupations in the commercial, as marked off from the industrial field, must be considered in establishing vocational education. Commercial education, therefore, will be the subject of the following chapter.

Problems

1. What is the most important "product" of any school?
2. Consider from points of view of (a) employers, (b) labor unions, (c) the school, (d) the pupil, the relative merits of different ways of disposing of things made in an industrial school. (See p. 286.)
3. Where *trainers* are needed rather than professionally developed teachers, how can the matter of preserving ethical ideals under democracy be cared for in the schools?
4. Distinguish between *training* for skill, and *education* of best modern type. Can animals be trained or educated?
5. Show that increase of production in any plant necessitates both training and education in the ideal worker.
6. Contrast the relative merits of systems of part-time schooling: e. g., (a) where alternating teams work for a week in shop and then in school; (b) where young workers put in certain hours each day or week in shop and in school; (c) part-time classes run by corporations, and by the public schools.
7. Why should employers pay wages for the time young employees spend well in part-time courses?
8. How may we safeguard the health of students in part-time and evening courses?
9. Endeavor to formulate definite "projects" for teaching purposes, with regard to a part of some mechanical occupation or trade—as firing a boiler, making a door, installing a telephone, driving a rivet, running a planer, or a drill press.

10. Study and sum up the points of strength and of weakness in Allen's system of teaching jobs.
11. Consider the reasons why the State should pay for the vocational rehabilitation of its wounded and disabled soldiers. The strongest of these reasons?
12. Make a statistical study of the numbers and varieties of wounds received in war, and a similar study of industrial accidents per year. Give reasons for (a) enforcement of safety devices in industry; (b) vocational reëducation of the victims of industrial accident.
13. Examine the laws of your State with regard to employer's liability.
14. Show how industrial intelligence as well as skill may be developed even in a unit-trade class.

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CHAPTER X

EDUCATION FOR BUSINESS AND COMMERCE

The Workers: Enumeration difficult; men and women in business; new occupations; office employments; descriptions and definitions; office organization.

Executive Control in Business: Analysis of kinds; main divisions—finance, manufacturing, sales, personnel or employment; qualifications of employment manager.

Development of Commercial Education: An ante-bellum review—France, England, Belgium, Germany, United States; statistics of enrollment.

Terminology in Commercial Education: Important definitions; vocational commercial education; commercial arts education; analogies.

The Needs and the Types of Schools: Analyses useful; elementary commercial education; secondary commercial education; criticisms of secondary training; the private commercial school; evils of private schools; excellences of private schools; higher schools of commerce; three types.

Contemporary tendencies: Education for work in stores; New York City plan; department store education; methods of instruction; technical knowledge required; school credit for business experience; reducing the turn-over; education for foreign trade; the next step; a unit Junior and Senior High School plan; Federal aid for commercial education.

Summary. Problems. Selected References.

The Workers

Enumeration difficult. Illustrative of the variety of workers in occupations termed *commercial*, are the following: Accountants, advertising men, agents, auctioneers, bankers, bookkeepers, brokers, bundle boys and girls, buyers, cash boys and girls, canvassers, cashiers, clerks (in stores), clerks (shipping and others), collectors, commercial travelers, commission men, dealers,—retail and wholesale, decorators, deliverymen, demon-

strators, dictaphone operators, drapers, dressers (window), errand boys and girls, executives, exporters, floor-walkers, graders, importers, inspectors, insurance agents and officials, investment bankers, jobbers, loan-brokers, newsboys, packers, pawnbrokers, porters, real estate agents, sales agents, salesmen, saleswomen, speculators, stenographers, stockbrokers, telephone operators, traffic men, typists. This list refers predominantly to persons having to do with the buying and selling, exchange, or delivery of merchandise, rather than with its direct manufacture or production.

Comparisons for periods of years of the relative numbers of persons engaged in commercial pursuits with the numbers engaged in manufacturing or mechanical operations are difficult for several reasons. The enumerators of the Census failed to mark off the clerks as distinguished from the salespeople employed in retail and wholesale trade. There are occupations, such as those of clerks, stenographers, bookkeepers, which are common to many industries, while other occupations—such as those of linotypers, telegraphers, puddlers, pilots, are more nearly elemental or specific for certain industries. Furthermore, previous to the year 1910, the Census combined under the designation "Trade and Transportation" occupations later classified (1910) under "Trade" and "Transportation" respectively. Formerly, agents, bankers, brokers, bookkeepers, clerks, and copyists were for some inexplicable reason grouped with draymen, hostlers, steam railroad employees—engineers, switchmen, etc., and undertakers! However, during the year 1910, the United States Census reported 3,614,670 persons under "Trade," and 1,737,053 persons under "Clerical." These together comprised about fourteen per cent of the gainful workers. (28)

Men and women in business. There is some indication that commercial life tends to be progressive for boys and static for girls. In one large American city, Cleveland, Ohio, sixty-

one per cent of the office workers were men, and thirty-nine per cent were women. However, among these workers, of those doing *administrative* work, ninety-four per cent were men and only six per cent were women.(3)

New occupations. The transaction of business a half century ago was relatively simple as contrasted with the procedure of to-day. The magnitude of contemporary transactions is stupendous. Inventions of machinery and of labor saving devices—such as the telephone, the typewriter, the dictaphone, the adding and computing machines, filing systems, efficiency devices, etc., have greatly modified the variety and types of business and commercial activities. Relatively stable in kinds of activity are bankers, brokers, exporters, importers, insurance agents, jobbers, newsboys, retail proprietors, sales people, wholesale dealers.

Office employments. The U. S. Bureau of Labor has attempted to furnish definitions of the various *office* occupations so that specifications for help may be made uniform, also to furnish a means by which the individual accepting employment may be informed as to the nature of the work he is expected to do.(29)

Descriptions and definitions. The definitions and descriptions were based upon studies extending over practically the entire United States. More than three score different occupations were enumerated, as follows:

Accountant	Chief clerk
Addressing-machine operator	Claims, or complaint adjuster
Advertising manager	Clerk, general
Auditor	Collection man
Bill clerk	Comptometer operator
Bookkeeper	Controller
Bookkeeper, type-writing machine	Copy writer
Calculating-machine operator	Correspondent
Cashier	Cost accountant

Credit man
Dictaphone operator
Dispatch clerk
Duplicating-machine operator
Ediphone operator
Employment manager
Entry clerk
Executive secretary
File clerk
General manager
Graphotype operator
Invoice clerk
Ledger clerk
Librarian
Mail clerk
Messenger
Multigraph operator
Office boy
Office equipment and arrangement supervisor
Office girl
Office manager
Order clerk
Paymaster
Personnel supervisor
Phonotypist
Photostat operator
Price clerk
Private secretary
Production manager
Publicity manager
Purchasing agent
Receiving clerk
Route clerk
Sales manager
Shipping clerk
Shop router
Statistical clerk
Statistician
Stenographer
Stenotypist
Stock chaser
Stock clerk
Storekeeper
Stores clerk
Switchboard operator
Tabulating-machine operator
Telegraph operator
Telephone operator
Timekeeper
Traffic manager
Transcribing-machine operator
Typist
Welfare supervisor

Here are a few selected definitions of the Bureau illustrative of the above occupations. Code words are printed to the right.

ACCOUNTANT — ABATE

Kindred Occupations: Auditor; Cost accountant.

Description: The accountant makes a thorough study and analysis of the business and devises and installs the forms of books and accounts best adapted to meet the needs of the concern. Once a satisfactory system has been put into operation, the accountant oversees the general bookkeeping force and makes up statements of

results when required. He interprets the results shown by the financial statements and prepares such special statements as are needed.

Qualifications: Should be familiar with general office practice and should have an analytical mind. Should have executive ability and be mentally alert. Should have graduated from an accountancy school of recognized standing, or have had equivalent experience.

Schooling: High school; higher education desirable.

ADVERTISING MANAGER — ABODE

Kindred Occupation: Copy writer.

Description: The advertising manager plans and carries out the publicity policy of the firm.

Qualifications: He must be able to write and arrange forceful, timely, convincing, and grammatical copy for newspapers, magazines, trade and house papers, catalogues, form letters, booklets, and other advertising mediums. He must understand the details of publishing and printing and must determine the size, frequency, and position of insertions. He should have had selling and newspaper experience and know the advantages and limitations of the various advertising mediums. He must have initiative, originality of expression, breadth of view, and a knowledge of human nature.

Schooling: High school; higher education desirable.

CARD-PUNCHING-MACHINE OPERATOR — CLICK

Description: The card-punching-machine operator transfers data from original records to tabulating machine cards by punching holes into a standard tabulating card.

Qualifications: Accuracy; speed.

Schooling: Common school.

CREDIT MAN — CARD

Description: The credit man investigates the financial standing and reputation of customers, and passes upon the extent of credit to be advanced them; approves or rejects charge sales.

Qualifications: He should be familiar with commercial agency ratings and be able to read reports and statements correctly and intelli-

gently. Should have some accountancy training and a thorough knowledge of credit instruments. He should have a thorough knowledge of trade and financial conditions, have keen business insight, should be a good judge of men, possess tact, have a good memory, and be thorough.

Schooling: High school.

FILE CLERK — FADE

Description: The file clerk files away for safe-keeping letters and other papers, and finds them promptly when they are needed.

Qualifications: Should have had some general office experience and be familiar with the various filing systems. Should be a keen observer, a quick thinker, possess a good memory and a mind for detail. Should be thoroughly conscientious, accurate, and alert.

Schooling: Common school; standard course in filing, or equivalent.

OFFICE MANAGER — OCHER

Description: The office manager has charge of the office and must see that each department has the proper number of employees, that the work is satisfactory, that the methods of the office are efficient, that the work is properly and promptly dispatched, and that the workers are efficiently placed. He is responsible for regular and punctual attendance, and looks after the employment, transfer, and discharge of office help.

Qualifications: He must be progressive and have a broad point of view, the power to direct others, and the ability to delegate work that can be done by subordinates. He must understand thoroughly the work of every department and its interrelations. He must be enthusiastic, alert, tolerant, firm, tactful, and resourceful.

Schooling: High school; higher education desirable; accountancy and business courses desirable.

PURCHASING AGENT — PALL

Description: The purchasing agent investigates market conditions, determines where the needed material can be most advantageously purchased, and sees that the material is bought and delivered at the proper time.

Qualifications: He must know how to obtain information as to sources

of supply, and how to give records of past purchases, prices, and quotations. He must know how much material must be purchased and when to purchase it most advantageously. Good judgment; must be well balanced and alert; technical education in his industry desirable.

Schooling: High school.

STATISTICIAN — SHIRK

Description: The statistician is responsible for the collection, compilation, and preparation of statistical tables, graphs, and reports of various kinds.

Qualifications: Should have experience in investigative and statistical work and a broad general knowledge of statistics and their application to business conditions. He should be thoroughly familiar with the work of accounting, sales, and statistics, or have equivalent training.

Schooling: College education.

TABULATING-MACHINE OPERATOR — TAME

Description: The tabulating-machine operator assembles the tabulating machine cards by means of an electric sorting machine, which classifies the cards according to the desired classifications.

Qualifications: Accuracy, speed, manipulative skill, and a mind for detail.

Schooling: Common school; special training.

TRAFFIC MANAGER — TAN

Description: The traffic manager specifies for the purchasing department the best routing for outgoing and incoming freight; computes freight charges, checks freight bills, and handles all claims for damages, loss, or overcharge.

Qualifications: He must be thoroughly familiar with all railroad routes, terminals, and tariffs in the territory over which he is to route freight. Must be familiar with interstate commerce laws and methods of packing and classifying freight. Actual railroad experience essential.

Schooling: High school; courses in business arithmetic, industrial history, commercial geography, and business procedure.

TRANSCRIBING-MACHINE OPERATOR — THUS

Kindred Occupation: Typist.

Description: The transcribing-machine operator types the dictation which has been recorded on the cylinders of the dictating machine.

Qualifications: The operator should be neat, accurate, mentally alert, and quick. Should have a thorough knowledge of business English and letter writing, spelling, and punctuation. Must be a high-grade typist and should have had special training in transcribing. Accurate hearing.

Schooling: Common school; high school desirable; special training as typist.

WELFARE SUPERVISOR — WAGE

Description: The welfare supervisor has general charge of the working conditions that make for efficiency and well-being of factory and office employees. The duties include the oversight of hospitals, lunch rooms, wash rooms, and libraries, housing conditions, and often require visits to the homes of the workers.

Qualifications: Must have a knowledge of factory hygiene, housing, education, club activities, the improvement of the industrial environment; courses in industrial and social sciences or equivalent.

Schooling: College education or equivalent.(29)

Office organization. The Cleveland Survey thus classified kinds of work and the positions of a typical large office organization:(3b)

KINDS OF OFFICE WORK CLASSIFIED

Administrative	*Clerical*
Financiering	Accounting, bookkeeping
Organization and administration	Credit work
Merchandising and advertising	Handling funds
Development and experimentation	Correspondence
Efficiency engineering	Filing, records

Workers	
Officials	Auditors
Managers	Accountants
Salesmen and advertising men	Bookkeepers
Other specialists	Credit men
Assistants	Cashiers
	Clerks
	Stenographers
	Machine operators
	Telephone operators
	Messengers
	Office boys

Executive Control in Business

Analysis of kinds. In well-organized concerns there may be found different divisions of administration. Professor Robinson thus outlines business organizations:(32)

Ultimate Authority	General Policies	Chief Executive	Departments
Individual proprietor	Individual proprietor	Individual proprietor or general manager	Legal Accounting
Partnership	Partners	Partners, severally, or managing partner	Purchasing Manufacturing
Corporation	Stockholders and directors	Executive committee or president	Sales
Co-operative society	Society and the committee	Executive committee or president	Transportation

Main divisions. Another way of looking at the main departments of business administration yields the following four main divisions:

(1) *Finance,*—chiefly under the charge of a treasurer or president.

(2) *Manufacturing,*—under the charge of a general manager, superintendent, or otherwise designated officer.

(3) *Sales,*—under the charge of a salesmanager with specialists as assistants.

(4) *Personnel, or employment.* This fourth, and recently recognized, general division of industrial management is concerned with the centralization of activities having to do with the "human relations"—that is, with living, education, promotion, discipline, discharge, wage setting, pensions, sick benefits, housing, etc., of employees.

Qualifications of employment manager. It is our purpose to illustrate more fully only the fourth of the above divisions—employment. This new division of commercial and industrial organization involves employing specialists rather than permitting its functions to remain under the charge of a variety of minor executives, superintendents, foremen, head clerks, and bosses. Edward D. Jones of the War Industries Board, thus describes the successful employment manager:(14)

> The employment manager, who measures up to the new standards now being set, is a first-class executive, standing on a parity with the sales manager or the production engineer. He has the more need of talent because of the newness of his position, a circumstance which emphasizes flexibility of ideas, the ability to conduct investigations, the courage to be a pioneer, and the power of commanding the confidence of others in his pioneering. Again, his position is difficult, because he stands between parties which have been traditionally opposed to each other, namely, capital and management on the one side, and labor and craftsmanship on the other. He must always perform the functions of a mutual interpreter and often those of a peacemaker.
>
> In considering a proposed occupation it is wise to present a sober view of its conditions, so that persons who lack a sufficient persistency and depth of conviction for success may be early dissuaded. Wherever

there is authority there is responsibility; where there is reward there is struggle. If the general significance of employment management lies in its accord with the progressive tendencies of the age, the greater part of the energies of the individual employment manager is absorbed by the practical problems of finding enough workmen, of supervising records, and of hearing and adjusting complaints. It may be the lot of an employment officer to deal with a hard-headed proprietor, who is habituated to take the defensive against new plans. He may encounter the open or concealed opposition of foremen who, for the sake of prestige, cling to functions they can not properly perform. He may find organized labor cold to benefits which the unions have not won, and which look toward the substitution of a vertical bond, uniting employer and employed, for the horizontal union of employees of different establishments.

All of this means that the successful employment manager must be a person exceptionally fitted for leadership. He needs good native ability, made serviceable by adequate general and special training. He should possess a well-balanced and absolutely impartial judgment. It is a powerful aid if he possess humanitarian instincts and a sympathetic disposition. These must, however, be real attributes, and not a mere pose or policy, for no deception will long blind those with whom he is associated.

The person who measures himself for this position should be able to find indubitable testimony as to the strength of his own character, in the quality and amount of his achievements, and in the regard he has been able to earn from responsible persons with whom he has been associated. He should find in himself, also, the ability to understand human nature, not through the absurd practice of some quackery of phrenology and physiognomy, but by having analyzed his own nature, and having found therein the instincts and emotions which illuminate for him the motives and passion of others.

With these endowments the employment manager should couple sufficient education to avoid embarrassment in the oral or written use of his mother tongue. His education should enable him to understand the use of general principles, avoiding the pitfalls into which the so-called "practical" man has usually fallen when he complains of "theories." And this education should have had a wide enough scope

to enable him to meet the minds of others, and cement friendships, in a world of ideas larger than the details of his work.

Finally, the employment manager is perfected for the practice of his art by general industrial experience and (if the position in view be in a manufacturing establishment) by actual contact with shop problems. This shop experience is useful to make the candidate familiar with factory tools, machinery, equipment, materials, and processes. It will instruct him, as no form of systematic training can do, in the meaning of factory life, the significance of its discipline, the meaning of its schedule of hours in terms of fatigue, and in the attitude of the worker to his job, his boss, his fellow worker, and to life in general. Any general social experience which the candidate may have had, which has taught him how to deal with people, not as individuals only but in the various forms of voluntary organization, will have value.

The employment manager is related to recent movements in psychology. He has an opportunity to apply appropriate performance tests and general intelligence tests, for the purpose of sorting out those persons who, although adult in physical development, have still the minds of children. These classes he identifies, not to reject from employment but to place at appropriate work: not to browbeat and terrorize, but to protect and guide by patient and educative foremanizing to insure their becoming happy and permanent members of the productive community.

To summarize the matter of qualifications we give the relative weights which a number of successful employment managers have agreed upon for five principal factors:

	Per cent
Personality	35
General industrial experience	25
Executive experience	20
Shop experience (for employment managers in manufacturing establishments)	15
Experience with organized social movements	5
Total	100 (ibid.)

Development of Commercial Education

An ante-bellum review. The following abstracts and quotations present the substance of an historical review of commercial education written by Dean Johnson a few years before the World War. These items were set forth:

France had a few old and well-established schools of commerce, but on the whole the number of students in commercial education was surprisingly small, and the system was not very extensive. There were continuation schools with evening sessions under government supervision, in which instruction was given in commercial and industrial subjects. Private commercial schools like those in the United States were also found in many cities. The chambers of commerce were responsible for three other types of commercial education: (1) Free evening classes; (2) secondary commercial schools; (3) higher commercial schools. Of the third type, the School of Higher Commercial Studies at Paris was the most advanced. It presumed a fair degree of maturity in the students, and the number of these is limited. A two-year course was given of about the grade of university schools of commerce in the United States. Emphasis was laid upon instruction in languages, accounts, commercial geography, commerce, and commercial law. There were more than a dozen other higher schools of commerce in France. Some are among the oldest in the world.

England was far behind, a fact which has caused no little uneasiness among English business men. The chief hindrance to progress was the examination method which has been in vogue there so long, and which naturally has given little incentive to improvement of instruction. Examinations in commercial subjects were conducted by the London Chamber of Commerce, the Society of Arts, the Institute of Chartered Accountants, the Institute of Bankers, and many other bodies, each for its own aims and in its own way. There was little coöperation between the bodies, although this defect is being remedied. But because of this unfortunate system, schools have been devoted too much to cramming, and development has been individual and slow. Up to the beginning of the present century there was little commercial education worthy of the name. Although there were almost innumerable va-

rieties of commercial schools, few were comparable with similar ones in Germany and the United States. Continuation schools had been established and recognized by the Department of Education. They gave evening instruction of a rather elementary kind in commercial subjects. There were a number of private business schools, notably the Pitman School, similar to those in the United States, and equal to the best of them. Secondary schools of commerce had been established in a few large cities, through the efforts of the chambers of commerce and other commercial bodies. The London School of Economics and Political Science, founded in 1895 and supported at first by the Technical Education Board of the London County Council, gave higher commercial instruction of a rather liberal character. In 1900 it was admitted into the University of London. Courses covering a wide range were given, and the degrees of Bachelor of Science and Doctor of Science were conferred upon successful candidates. Other university and college schools of commerce, most of them of a more professional character than that at London, have been established in Liverpool, Manchester, Leeds, Birmingham, and other cities. The evening courses have met with a fair degree of success.

Belgium is credited with having established the first commercial school of true university grade at Antwerp in 1853, and the work had been kept up to date.

Germany. Her growth and development in the two fields (commercial education and commerce) was rapid and simultaneous since the latter part of the nineteenth century, especially since 1887, which marked the beginning of Germany's real advance in commercial education. The result has been manifested in the most complete and comprehensive scheme of commercial education in the world. Its salient features were the close relation of its several parts and its breadth of outlook. The system in Germany's education before the war was the envy of foreigners. The whole structure was planned to give a unified and thorough preparation for any calling in life. It was fostered and controlled by the government, and thus secured not only provisions for all classes of students, but also a harmonious interrelation of the several schools. The *Realschulen* and *Oberrealschulen* were credited with the foundation of the scheme of commercial education, because they had been kept constantly in touch with changing needs, and have

therefore supplied preparation that is not too rigidly classical in character. The strictly commercial education, however, was given mainly by three types of schools, corresponding roughly to the three main types in the United States; namely, the private commercial school, the public secondary school, and the university. In Germany the three main groups are the continuation school, or school for apprentices, the middle commercial school, and the higher commercial school.

United States. The beginning of commercial education in the United States was characteristically American. It was a growth, not an institution—a growth of private enterprise in response to public need. It was spontaneous, and several early forms were almost simultaneous. All were in answer to definitely voiced demands. In the early part of the last century there was practically nothing in the way of instruction to prepare for business life. Boys who looked forward to business careers left school early and entered stores or offices, where they served apprenticeships of greater or less duration. Here they learned such bookkeeping and business methods as were then in vogue. The quality of instruction they obtained depended, of course, on the employer. There was small opportunity for comparison or improvement of methods, and progress was slow, individually and collectively. Even this meager instruction was not to be obtained by all. The increasing importance of commerce attracted more men than the offices and stores could train; and this training, moreover, was too slow for those who had already reached manhood. . . . Their demand was unheeded by public and private schools then in existence. As it increased, private schools and classes in bookkeeping sprang up in all the principal cities of the country, somewhere between 1830 and 1840. These private schools, formless and unsystematic as they were, gave the first commercial education and were the forerunners of the modern business schools that are found in every important city in the United States.

To whom belongs the honor of the first venture in commercial education is a matter of some dispute. It has frequently been attributed to R. M. Bartlett of Philadelphia, who established a school there in 1843 to provide the substitute for apprenticeship, of which he had himself felt the need. By others the honor is claimed for James Bennett, a New York accountant, who seems to have conducted a private school, in which bookkeeping and navigation

were the principal subjects, some time between 1818 and 1836. The exact date when the school was begun is not known. James Gordon Bennett, with whom James Bennett is frequently confused, announced a school of this kind in 1824, but it is doubtful if it was ever established. Other early schools were founded by Peter Duff of Pittsburg, George N. Comer of Boston, and Jonathan Jones of St. Louis. Most of these early schools had bookkeeping as their foundation subject. There were some, however, of slightly different origin. They were begun by itinerant penmen, such as Silas S. Packard and Platt R. Spencer, who formed penmanship classes in various cities. From these classes schools often sprang up. The number of these business schools seems to have increased with more rapidity than their quality. Penmanship and bookkeeping were still the main subjects, with frequently the addition of commercial arithmetic and commercial law. Later stenography and typewriting came in. But in general the instruction given was purely technical and along narrow lines. Practical utility rather than cultural value was sought. The instructors were frequently men of deficient education, especially in English composition, and in many cases encouraged extremely mechanical methods of work.

What was more serious, the aims of education were often defeated by too great an influence of the money-making spirit in the management of the schools. Energetic and resourceful men established chains of business schools in a number of cities throughout the country. These they placed in charge of young men as managers, who were to share in the profits. The most important of these chains was that established by H. B. Bryant and H. D. Stratton, whose efforts began in 1853 and resulted in 1863 in a strong combination of schools, to the number of fifty or more, all under their general management. So successful were they that about 1866 they made an attempt to monopolize the field of commercial education by crushing all competition of other business schools. Internal dissensions and opposition by the managers of many of their branches, and the failing health of Mr. Stratton, the real director of the organization, made this plan impossible of execution. Other associations of commercial schools were begun in 1866, but none rose to the commanding position enjoyed by the Bryant and Stratton chain in the early '60's. The intense competition which followed was productive of as great evils as the monopolistic system. Special in-

ducements were offered to part-time students. In some cases the only requirement for entrance was the necessary fee. Vast sums of money were spent in all kinds of advertising. Brass bands, stump speeches, and penmanship exhibitions at county fairs and the like were among the schemes resorted to by some of the aggressive "educators." It is not surprising, in view of this, that there were many charlatans in the field, and that the work suffered accordingly. In spite of the evils, the schools grew in number and in size with astonishing rapidity. They furnished training that was not to be obtained elsewhere, and served an extremely useful and necessary purpose. From an enrollment of at most a few score students in 1840 they increased in half a century to more than 100,000.(7)

Statistics of enrollment. The United States Bureau of Education states that the numbers of students in public and higher institutions had not been reported for a number of years. These unreported schools and the enrollment in the hundreds of business schools not reporting would increase the known totals, it is believed, nearly one-half million. Table XVIII on page 325 contains data from schools reporting to the Bureau for 1915 and 1916.(36)

Terminology in Commercial Education

Important definitions. Two definitions may be accepted as fairly well standardized in the attempt to clarify the terminology of business and commercial education. These denote respectively vocational commercial education, and commercial arts education.

Vocational commercial education. A committee of the National Education Association agreed that "vocational commercial education" denotes those forms of vocational education the direct purpose of which is to fit for some recognized commercial calling, such as that of accountant, banker, broker, clerk, shopper, salesman, stenographer, or telegraph operator.

TABLE XVIII

STUDENTS IN COMMERCIAL COURSES, 1915 AND 1916

Classes of Institutions	1915				1916			
	Schools	Students			Schools	Students		
		Male	Female	Total		Male	Female	Total
Private high schools	762	9,369	8,346	17,706	746	9,056	8,172	17,228
Public high schools	2,863	92,226	116,379	208,605	2,844	105,142	138,043	243,185
Commercial schools	843	94,870	88,416	183,286	912	99,134	93,254	192,388
Total	4,468	196,456	213,141	409,597	4,502	213,332	239,469	452,801

Commercial education or preferably *commercial arts education* similarly is used to denote those studies derived from, or based upon, the commercial pursuits which are designed to give liberal or general education and to contribute to vocational guidance and vocational ideals in the field of the commercial occupations.(34)

Analogies. The Committe declared that while the term *commercial arts education* may seem to be somewhat forced in this connection, nevertheless there are good analogies in the departments of industrial arts education, agricultural arts education, and household arts education. The actual outcome, in vocational efficiency, of many courses that have been designated by the term "commercial education" is in doubt. "This has, perhaps, been particularly the case" declared the Committee, "when these alleged vocational studies have been carried on in public high schools. The approach to them has usually been bookish and theoretical, and comparatively slight effort has been made to base either practice or intellectual study on the actual requirements of commercial callings."

The Needs and the Types of Schools

Analyses useful. It appears that: (a) Various commercial callings should be analyzed with reference to the adaptation to them of appropriate vocational courses; (b) commercial education not strictly vocational can be made of value to general education and to facilitate wise choice of occupation; (c) misdirected efforts often result from the failure to draw the line between vocational commercial education and commercial arts education designed as a part of general or liberal education. It is probable that more than three-fourths of the workers in the commercial world are found in the fields of salesmanship, etc., over against only about twenty per cent in the specialized work of accountancy, stenography, and typewriting. The need of attention to the educational possibilities with reference to com-

mercial life other than that of office helpers is obvious. The actuarial accounting preliminary to the establishment of any extensive vocational course is applicable to this phase of vocational education. (*See* page 408.) Except during the emergencies of war times there has been as a rule an over-production of poor-grade stenographers and office assistants, whereas systematic preparation for salesmanship and the more difficult positions in commerce has been lacking.

Elementary commercial education. There is considerable demand for an elementary type of commercial education for boys and girls in the seventh and eighth grades. Every man or woman needs some training in the conduct of simple business affairs. There is also the possibility of utilizing such elementary courses in order to facilitate later a wise choice of a vocation. Practical methods of teaching arithmetic, simple accounting, courses in penmanship, typewriting, commercial geography, home economics, talks about industrial organization, visits to industrial establishments may be conducive to this end.

F. G. Nichols calls attention to the danger of committing boys and girls too early to courses that lead to commercial life. Says he:

> There is at present a growing demand for an elementary school commercial course to take its place with other seventh and eighth grade vocational courses. The purposes of such a course may be stated as follows: To provide vocational education for a part of the great number of children who leave school before the high school is reached; to hold boys and girls in school a year or two longer; to interest more pupils in a complete education for business; to increase the pupil's knowledge of the opportunities that are open to him; to develop in boys and girls, by concrete instruction, business habits so essential to the largest measure of success in any field of human endeavor; and, in short, to make the seventh and eighth years count for more in the child's education.
>
> It must be kept in mind by those who would frame such a course

that it must be essentially vocational; that it not only must be vocational, but it must be within the easy comprehension of the boys and girls of the seventh and eighth grades; it must also be suited to the occupations that are open to such boys and girls; it must be planned with regard for local requirements; it may well be differentiated for the two sexes, in view of the existing differences in occupational opportunities open to each; it may also be planned with reference to urban or rural requirements. It is also important to remember that while early choice is extremely desirable, irrevocable choice at such an early age will always produce much harm unless the paths from one course to the other are kept open as long as possible. Further, it is well to recognize the fact that secondary education can not be forced downward into the lower school without such modification of subject matter as the immaturity of the grammar-school children makes imperative. It may also be suggested in this connection that the traditional business course of the secondary school is rapidly undergoing reorganization to meet the demands of modern business. It must, therefore, be apparent that the old bookkeeping and shorthand course will not meet the needs of the grammar-school boy and girl.

In the junior high schools of this country elementary commercial courses have been organized. Almost without exception they include commercial arithmetic, bookkeeping, shorthand, typewriting, commercial geography, business writing, and English. They do not differ materially from the secondary school commercial course, notwithstanding the important fact that much of the subject matter is beyond the comprehension of grammar-school children, or the more important fact that boys and girls of grammar-school age are not wanted as bookkeepers and stenographers.(9)

Secondary commercial education. Publicly supported commercial education of secondary grade has been given in three kinds of schools. There are respectively courses in the usual high school, in separate "commercial high schools," and in "high schools of commerce." Originally, our high schools were generally regarded as preparatory schools for colleges and were often dominated by classical scholars. Scientific courses

were given in most of the large high schools, and the public soon afterwards clamored also for commercial training.

Short courses of one or two years were appearing before 1890 and by the year 1895 there were 30,330 students enrolled in commercial courses in high school. In 1916 there were reported 243,185 students in commercial courses of the public high schools of the United States,—about 20 per cent of the total enrollment. In the larger cities the average enrollment of public high school students in commercial courses is 27.4 per cent, ranging from 10.5 per cent in Cleveland, Ohio, to 46.6 per cent in Boston, Mass.(36) In the year 1892 Professor Edmund J. James, then of the Wharton School Finance and Commerce of the University of Pennsylvania, delivered a notable address urging the establishment of separate commercial high schools.

Criticisms of secondary training. Voicing considerable criticism of commercial training in high schools, E. F. Dahm points out that present world conditions demand modifications in this training.(11) He claims that our present commercial training in the high school too often prepares for the drudgery of business,—produces clerks, while the collegiate commercial training is for the poetry of business and that the content of each is too local.

Typical commercial courses have been: bookkeeping, commercial arithmetic, penmanship, shorthand, typewriting, etc., and the history of commercial economics, commercial geography, commercial law, English, letter-writing, and secretarial work—with the preponderance of enrollment and emphasis placed upon the first group. Courses are given in one, two, three, or four years. The aim of first year work is to produce office boys; of the second, shipping clerks; of the third, private stenographers; of the four, *pot pourri*. Says he: "Salesmanship too often fits for spiritualistic séance work rather than for intelligent marketing of goods. Grammar grade physiology has been given many bruises of late by shouldering upon it explanations of physiognomy, phrenology, and corrupted psychology." Parents and business men

often regard high school commercial education more or less as a measure of last resort. Business men prefer the generally trained high school student and hence commercial courses attract a poor grade of student, thinks Mr. Dahm. Constructively he suggests that effective changes should be worked out by a large committee composed of business men and teachers from various parts of the country.(11)

F. V. Thompson in a statement written during 1919 observed:

The Cleveland Survey shows what any survey invariably does—that commercial education in our public high schools pursues a policy quite independent of the business needs and conditions of the community under consideration. Commercial education has been a thing of school credits and academic standards conducted in accordance with college entrance requirements or with abstract scholastic procedure. Commercial educators have neither seen nor apparently cared for the actual conditions of employment into which their graduates may go. The school prepares a certain product which business must take or leave just as it chooses. . . . The findings of this survey, as well as the findings in other like surveys, illustrate beyond dispute that commercial education in our public high schools has followed wholly the traditions of the school and has been obvious to the field conditions of the vocation. There is a growing body of evidence, however, that there is a willingness to change our procedure. We may expect within the next five years to see sweeping and radical changes characterize commercial courses in our high schools.(5)

The private commercial school. The private commercial school has been subjected to even more severe criticism than the commercial work of the public high school. The growth of these schools was spontaneous and due to private enterprise. Boys who entered business fifty years ago left school early and entered stores or offices where they gradually learned bookkeeping or business methods. Bookkeeping, penmanship, and later, commercial arithmetic and law were foundation subjects in the various schools founded by pioneers such as Bartlett,

Bennett, Duff, Jones, Packard, Spencer, Bryant, Stratton, and Eastman.

Evils of private schools. Among the many evils these have been noticed in unregulated enterprises of commercial education: Solicitors have been employed to make visits to parents, and pupils often have been induced to leave school before completing the eighth grade, a short-cut to wage-earning being offered as an inducement for them to take a course at the private school. The solicitors have sometimes worked on commission, and it has been estimated that from one-fourth to one-third of the gross receipts have been expended by some commercial schools for solicitation of prospective pupils. In Chicago, it was estimated that during 1912 $1,425,000 was paid by individuals to private business colleges. Another evil is that public educational authorities have as a rule no jurisdiction or power over these private enterprises, with regard to capabilities of teachers, character of instruction, and school hygiene with reference to ventilation, illumination, spacing, and hours. Courses offered may be short and superficial, while there are instances of pupils being induced to remain enrolled indefinitely, for the sake of the fee.(7) (8)

Excellencies of private schools. Nevertheless, the private schools of business have graduated scores of men who have attained responsible positions in the world. These schools rendered a real service when facilities in public schools were lacking. Students who complete the courses of reliable institutions often gain quick mastery of the tools of business. The best of private schools have elevated and enriched their standards, given much practical instruction, and surpass some public high schools in accomplishing a definite aim,—the specific training for business life.

Higher schools of commerce. Commercial education in colleges and in universities has been retarded by the usual conservatism that resists the entrance of new studies. The Wharton

School of Finance and Commerce in the University of Pennsylvania made possible in 1881 by the gift of Mr. Joseph Wharton was for nearly a score of years practically the only higher school of commerce in the United States, although early attempts had been made in the West. The School offers special training for these vocations: Manufacturing, banking and finance, brokerage, accounting, transportation and commerce, insurance, social and civil work, the law and public service, journalism, secretaryship, etc.

Three types. Johnson distinguishes three types of higher schools of commerce: (1) Schools in which the liberal and the practical elements are given in coördination and evenly balanced, e. g., the Wharton School and schools of commerce in state universities. (2) Schools requiring or giving the liberal element first, and the practical training afterwards, e. g., the Amos Tuck School of Administration and Finance of Dartmouth College, which is a graduate professional school following college work. The Harvard School of Business Administration is of the same type. (3) Schools in which the practical or professional training occupies the dominant position, e. g., the Schools of New York University and of Cincinnati.

Contemporary Tendencies

Education for work in stores. "Business men," observes Professor Galloway, "have devoted much scientific thought and energy to the solving of their financial and accounting problems, but with all this attention to their organizations from the accounting, production, and general marketing point of view they have not been able to advance evenly and rapidly because of the weak link in the chain represented by the selling departments."(16) Moreover, he shows:

> An examination of the activities of retail merchants shows that they not only play an indispensable part in the general scheme of

business organization but also that the present attempt to increase the efficiency of the sales employees by extending their selling ability is a direct successor of a long series of efforts to carry out their economic function in ways most serviceable to the public.

Four landmarks on the road of retail development stand out above all others: they are *institutional organization, one price policy, the guarantee of satisfaction, and expert personal salesmanship.*

New York City plan. An effort has been made in New York City to bring together in a coöperative plan the *university*—where teachers are trained, *retail stores*—where the jobs are, and the *high school*—where the sources of sales material exist.

The experiment, the results of which during coming years will be of interest, was effected by the coöperation of the following: Chancellor Brown of New York University offered the educational facilities of that institution. Superintendent Ettinger got the State to certificate teachers of salesmanship thus putting this branch of teaching on a level with other high school curricula. The Retail Dry Goods Association furnished financial backing to develop teachers of salespeople of a required service standard. In brief, the method of training has five aspects: (1) University lectures and class recitations; (2) store practice; (3) store investigations and reports; (4) thesis based on study of some actual retail business problem, and (5) coördination of classroom work with store practice under a specialist acquainted both with store and classroom.

Retail stores have been thus classified: (1) Neighborhood stores; (2) specialty stores, e. g., "five and ten cent stores"; (3) mail-order houses; (4) department stores, which carry a wide range of goods,—from food to books, from coffins to gas engines. We shall refer especially to department stores.

Department stores employ large forces of salespeople, but also other workers. In Cleveland, Ohio, the occupational distribution of employees in five such stores was as follows:(3)

Selling force	2,958
Office force	661
Delivery force	383
Marking and stockrooms	209
Other occupations (carpenters, engineers, electricians, waitresses, manicures, etc.)	1,859

The attractiveness of occupation in department stores varies greatly in different establishments.

Department store education. An interesting type of corporation school is the class or institution conducted within or supported by the modern department stores. Most of the workers within such stores are girls or women, and the professed aims of educational courses paid for by the proprietors in the best of the department stores are such as these: To make advancement depend upon efficiency rather than upon years of service; to increase the productiveness of employees; to discover whether or not a person is fitted for the vocation of selling; to encourage improved standards of living, better personal habits and ideals. In general the employees available for training in a department store may be classified thus:

1. New employees.
2. The junior force, consisting of the youngest workers, such as:
   Cashiers.
   Examiners.
   Markers, etc.
3. Salespeople.
4. Office workers.
5. "Nonproductive" groups, not included with juniors, as:
   Elevator men.
   Porters.
   Drivers, etc.
6. Executives, especially floor managers and buyers.(30)

Published outlines and syllabi based upon the above or similar analyses are available, including courses in salesman-

ship and merchandise. These syllabi are suitable for high school courses, part-time continuation courses for workers employed, evening school extension courses, and also teachers' courses in retail selling.(7) (12) (30)

Methods of instruction. No distinct, well-developed technic of instruction can be said to exist in the matter of commercial education. Some of the observations we have made elsewhere concerning "methods" and the "technic of teaching" apply to those phases of vocational education called commercial. Professor Judd, an accomplished psychologist, notices these tendencies in commercial teaching:

(1) *Rapid execution*—as in arithmetic and bookkeeping—is emphasized.

(2) *Exactly similar conditions to those in industry are cultivated.*

(3) *Stress is laid upon actual contact of the teacher with trade or industry.*

(4) *Instruction is largely individual.*

(5) *Academic standards, and practical or commercial standards, are divergent.*

(6) *Industry tends toward specialization.*

Professor Judd admits that some business colleges "have discovered some of the most efficient methods for training students rapidly in business methods." He discloses, however, psychological and sociological problems which are implied but not yet solved in the application of the six principles briefly indicated above.(22)

Technical knowledge required. The necessity of contact with trade and industrial conditions upon the part of teachers in commercial education may be illustrated by reference to three instances. Below are shown outlines of the technical knowledge required in three selected occupations of a department store, as quoted from the Cleveland Survey.(3)

Examples of Technical Knowledge Needed

Technical Knowledge Needed by Salespeople in the Silk Section

1. Trade names of silks.
2. Names of different colors—shades and tints of standard colors may have trade names at different seasons.
3. Different kinds of silks by:
   (*a*) Weave: Taffetas, grosgrains, plain foulards, poplin, habutai, crepes (crepe de chine, crepe meteor, etc.), messaline, etc.
   (*b*) Finish: Brilliant, lustrous, dull, chiffon, and heavy.
   (*c*) Pattern: Moire, tub silks, jacquard, brocade woven as plaid, printed as foulard, etc.
4. Pongees, shantungs, and raw silks.
5. Satins: Differences in weight and weave of—duchesse, liberty, charmeuse, peau-de-cygne, merveilleux, etc.
6. Silks for day wear.
7. Silks for evening wear: Colors and combinations for evening.
8. Velvets: Cut, uncut, chiffon, paon, panne, etc. To distinguish short erect piles.
9. Velveteens: Plain and twill back.
10. Corduroys: Plain and twill back, English and American.
11. Knowledge of quantities required for garments and for special purposes.
12. How to meet the "ready to wear" argument from customers:
    (*a*) Superior quality of material.
    (*b*) Better fit and finish.
    (*c*) Exclusive designs, no duplicates.
    (*d*) Original color combinations.
    (*e*) Adaptation to individual style and preference.
13. To cut a true bias.
14. To cut and prepare samples.
15. To handle goods properly:
    (*a*) Display purposes.
    (*b*) To avoid new folds and creases in goods on shelves and counters.
    (*c*) To fold properly for wrapping. (3b)

Technical Knowledge Needed by Drivers in the Delivery Department

1. Purpose and need of traffic regulation:
   ("Street traffic regulation in the management of vehicles so that they shall interfere with one another as little as possible and be able to go from point to point in the shortest time and with the least danger to themselves and pedestrians.")
2. Responsibility for public safety divided between police and drivers:
   Drivers must know the rules and their own rights.
   Police must enforce regulations.
3. Regulations as to keeping to the right, meeting, passing, turning, crossing, and stopping.
4. Speed:
   Ordinary speed of vehicles and motor trucks.
   Passing schools and hospitals. Approaching bridges.
   Crossing bridges and draws.
5. Right of way of:
   Police, fire department, ambulances, and U. S. Mail.
   Processions.
   Pedestrians.
   Vehicles on main thoroughfares and thoroughfares running east and west.
6. Relations between vehicles and street cars:
   Right of way of street cars.
   Overtaking and passing street cars which have stopped to discharge passengers.
7. Congested districts:
   Location.
   Special regulations in regard to travel in these zones.
8. Signals:
   Semaphores.
   Colored lights. (Ibid.)

Technical Knowledge Needed by Salespeople in the Shoe Section

This knowledge is arranged in the form of unit courses which are recommended in this report as the method of instruction.

Lesson 1:

Taking off customer's shoes; unbuttoning and unlacing shoes.

Pulling out stocking.

Putting on shoes; use of shoe horn; buttoning and lacing; tying lacings and ribbons.

Lesson 2:

The make-up of the shoe: counter, vamp, lining, etc.

Sewed shoes, turned shoes.

The line of the shoe; such points as the fact that taking off lifts or adding lifts to the heel will throw the shoe out of line and eventually spoil its shape.

Lesson 3:

Leathers and characteristics of each, wearing qualities, etc.

Kid, calf, patent leather, suede, buckskin; also canvas cravenette, cloth, and velvet as shoe material.

Lesson 4:

Fitting the shoe.

Measuring a foot to determine the proper size.

Length and width of shoes. Size marks.

Points at which a shoe may be stretched.

Insoles and heel pads to insure proper fit.

Lesson 5:

Cuts and styles:

Cuban, French, and military heels.

Long and short vamps, box toes, straight lasts, etc.

Front, back, and side lacings.

Lesson 6:

Fitting abnormal feet:

Such points as high insteps, bunions, tender feet, weak ankles, flat arches. The kind of shoe a particular foot can wear to best advantage and for greatest comfort. (Ibid.)

School credit for business experience. Arguments offered for making store work an essential part of commercial or salesmanship courses in high schools are such as the following: (1) Practice should accompany theory; (2) teacher may serve as interpreter of pupils' store experience; (3) pupils of high school age must obtain a "store background"; (4) coöperation between the stores and the schools is fostered; (5) interest may be added to school subjects; (6) well-conducted stores demand high standards of punctuality, accuracy, honesty; (7) store may supplement teachers' standards regarding conduct and dress; (8) poise and dignity of bearing are demanded in store practice; (9) pupils may learn to adjust themselves to work with various groups of people,—customers, fellow workers, executives.(30)

Reducing the turn-over. Analysis of one large department store employing about one thousand workers showed that as many employees left in one year as there are people normally employed in that store. That is, the "turn-over of labor" in this establishment was one hundred per cent in one year. If we count the losses incurred in training new people, the costs in poor service and wasted materials, and the results in disappointment and resentment of misfit employees, the problem of reducing the turn-over by scientific selection of good promotional material and by provisions for training and welfare work, appears grave.

The excessive rate of hiring and firing, of starting and quitting, observed in certain business establishments will not be entirely remedied by application of either or both of the above two remedies. In many instances the obviously much-needed remedies for unsatisfactory service or employment are fourfold, and simple, viz.: (1) Fair pay; (2) more reasonable hours; (3) fair systems of promotion; (4) healthful and pleasant working conditions. The absence of these four elements in business activity turns work into labor, drudgery, and even near-slavery.

Education for foreign trade. The increase of our merchant marine, our awakening to the menace of unfair methods of extending foreign trade, and the neglected opportunity for legitimate increase of business with our distant neighbors, are factors to-day stimulating provisions for education in foreign commerce.

Colleges of commerce are offering suitable courses, and there are also developing short intensive practical studies in various phases of commerce intended better to prepare young men for service with establishments interested in foreign trade. It is hoped to develop a force of young men who will increase American exports, and who as honest, capable representatives of American business, will also be "one hundred per cent Americans."(35)

The next step. The range of commercial education in the United States is wide. Johnson declares: "Indeed, it is doubtful if any other country can offer so wide a range. The chief weakness is that there is no coherent system by which a student may prepare consistently for a business career throughout his education. The next step in advance will be to coördinate the various elements and bring them into closer relation with each other. When this is done the United States will have a system of commercial education second to none in the world."(7)

Dean David Kinley recognized the need for a consistent, continuous system of commercial education. With regard to the closer articulation of the commercial work of secondary and of college courses in commerce he drew these conclusions during 1915:

> We are in the midst of a discussion of the proper entrance requirements to college courses in commerce and other special lines. The entrance requirements to colleges and universities of this country seem to show different principles of selection according to the views of the authorities in control. We can trace, first, the influence of the party of conservatism, which insists that the entrance requirements for the

old college course are sufficient for all purposes. Under the pressure of popular demand they have indeed yielded at some points, such as insistence upon Greek, and in more cases, upon Latin. We find, in the second place, the influence of those who think they can shape up a group of secondary school subjects which have some ideal relation to the course of study which the boys are afterwards to take. Still a third party insists, having the interests of the high schools only in view, that whatever the high schools teach should be an acceptable training for any college course. They make a few concessions, such as the provision of Latin or modern foreign language for particular college courses, but as a general proposition, what the high schools provide, should, in their opinion, be adequate, whether it be in typewriting, stenography, and agriculture, or Latin, history, and English. What may be called a subparty of this group is made up of those who say that the high-school course of study should have, in other words, a local color, and meet the demands of the majority of the people of the community even though they are not going to college. They resent what is called the attempt of the colleges and universities to dictate the high-school courses; but they are acquiescent in the counter proposal that the high-school courses shall dictate what the college may get. . . .

Should the preparatory course for a college of commerce include the commercial subjects because they are specifically preparatory to the college course? If so, to what extent? By specifically preparatory subjects I mean subjects of the same tenor, though of lower grade, as those of the prospective college course. These are, as usually enumerated, bookkeeping, commercial arithmetic, stenography, typewriting, business law, business organization and management, and sometimes commercial geography and economic or industrial history.

These subjects have the advantage of stimulating the special interest of the commercial student in a college preparatory course. That is a matter of considerable importance. A college of commerce is one whose program of study is intended primarily to increase the student's efficiency as a breadwinner rather than as a citizen. It is vocational or professional in its aim and probably will become more strictly so in the future. Its purpose is not to prepare for clerical positions but for executive or managerial places of more or less authority and responsibility. . . .

There is some likelihood that the amount of vocational study preparatory to college commercial courses will increase as commercial subjects of study grow. Business organization and practice, salesmanship, and advertising are subjects that are going into the programs of the schools and colleges. As their subject matter becomes better standardized and teachers capable of handling the subjects appear there will unquestionably be a large demand for such subjects. The probability is therefore that the next few years will see more highly specialized high-school courses preparatory to the college commercial and other technical or semi-professional courses of study. The colleges will be bound to admit students on this basis. But there is no probability that these subjects will become the main part of the program of the high-school boy. He still will be obliged to have his mother tongue, his history, his science, and in most cases his foreign language. Even from the purely utilitarian point of view these subjects must be retained.(24)

A unit junior and senior high school plan. A constructive effort was made by Nichols during 1919 to draw up a course of commercial studies having regard to the various types of school organization. In some cities the old eight-four plan of years or grades is used, in others, the six-six plan, and in still others the six-three-three, or junior high school plan is being tried out. Nichols suggests commercial curricula adaptable to all three forms of organization. Space does not permit reproduction of his outlines and explanation in full, but here are the essential features of his plan:

Junior high school commercial course.

Such a course usually has its foundation in the seventh year and while no special provision need be made for vocational training of boys and girls of the seventh school year age, it must be recognized that it is in this year that the choice of a course is made and the foundation for that course is laid. For this reason a seventh year outline is submitted, but it is not to be understood that highly specialized commercial training is necessary in this year.

At the end of the eighth year many boys and girls find it necessary to leave school and many others leave because of a desire to secure employment, or because of a dislike for school work. Therefore, it is necessary that we understand the positions that are open to such boys and girls. In a general way we may include the following among the occupations in which such boys and girls are employed: Check and cash messenger; bundle clerk; shipping clerk; stock clerk: general clerical assistant; mail clerk; mimeograph operator, etc.

Those who finish the ninth year will find it possible to secure positions as assistant bookkeepers, typists, and general office workers—positions slightly in advance of those open to eighth year boys and girls.

It should be remembered that in each year's work an attempt is made to interest the student to such an extent as to induce him to remain in school for more advanced training. It has not been found necessary to eliminate fundamental academic training such as English, arithmetic, domestic art, physical training, history, geography, and science, in order to prepare for the simple vocations for which he should be prepared. It is, therefore, quite possible for a student to cross over to almost any other course in the tenth year, if it seems best to do so. This is purely incidental, however, and has not influenced the organization of the course in any degree.

Senior high school commercial course.

Those who remain for the tenth year in high school will find the following positions among others, open to them: Bookkeeping positions of a more advanced character than those of the routine type referred to as being open to graduates of the ninth year; filing positions in which considerable responsibility is placed upon those who have complete charge of the files; positions as mail clerks with full responsibility for receiving and distributing the incoming mail and preparing and dispatching outgoing mail; shorthand positions of a simple character for those who have elected this subject in the tenth year; and clerical work of a more advanced character, including machine work of different kinds. From the tenth year on, however, through the eleventh and twelfth years, a form of specialization ought to be made available. Students who have shown marked ability in English, use of words,

spelling, shorthand, and typewriting, and who have shown some of the characteristics that go to make a good secretary, may be encouraged to specialize along this line. Such specialization will be especially advantageous for girls who desire to enter stenographic and secretarial positions.

Other students may show special aptitude for salesmanship. Such students may well be given an opportunity to specialize in an occupation that is rapidly developing along lines that will insure its place among the most desirable commercial occupations—retail selling. Others, especially boys, may be trained for outside selling.

Those who show special ability along accounting lines, or in general business administration, may be given a chance to prepare for accountancy and general business positions including advertising, salesmanship, and executive work.

In certain cities where foreign trade is important, those who are interested in this field should have an opportunity to specialize in it.

Therefore, the tenth, eleventh, and twelfth years are set up with the idea of affording such specialization as may be called for by certain well marked aptitudes.(27)

Federal aid for commercial education. To discover and isolate the items of Federal aid for commercial education would entail a review of work done by the United States Bureau of Education, by the Department of Commerce and Labor, and by various governmental schools maintained in Porto Rico, Hawaii, the Philippines, and Alaska. The Federal Board for Vocational Education operating under the Smith-Hughes and Smith-Sears Acts of Congress aided commercial education in three ways: namely, (1) by research; (2) by coöperating in paying the costs of part-time classes; (3) by maintaining provisions for the vocational reëducation of disabled soldiers.

The general provisions of the Smith-Hughes Act as they apply to day and evening school instruction did not permit the use of Federal money for instruction save in "trade, industrial, home economics, and agricultural subjects." The Board, however, interpreted the law to include commercial education, under its

provision for the maintenance of part-time schools and classes for persons over fourteen years of age who have entered employment. This arrangement, declared L. S. Hawkins, Chief of the Division of Vocational Education,(17) provided opportunity for one of the most effective schemes of commercial education, since young people may enter a wage-earning occupation and at the same time continue their education along commercial lines.

Summary

1. The numbers of women workers engaged in business and commerce steadily increases and new processes and occupations therein demand skillful adjustment of the schools to meet legitimate needs of prospective and employed workers in these fields. Knowledge of modern business organization is a first step in the coöperation of the schools, business, employees, and employers.
2. Ultimate executive control in business has many different forms, as—*individual*, *partnership*, *corporation*, *coöperative society*. Students of commercial education will note also the functions of various departments—finance, manufacturing, sales, personnel or employment. The employment manager of tomorrow should be a man thoroughly familiar with industry, but also well trained in scientific methods of judging men, and of suitable personal qualifications himself.
3. The history of commercial education before the World War is a record of irregular development in most countries, and not commensurate with the attention devoted hitherto by public school men to elementary, general, and secondary education. The eye-opening results of this war have given us different appraisals of the values of the German and other foreign school systems. It is interesting now to review appraisals written before the cataclysmic event.

It seems certain that commercial education in the United States will develop rapidly and in new forms devised scientifically by Americans.

4. Difficulties of standardizing terminology appear in commercial education, similarly as in industrial and agricultural education. To be noted are the distinctive courses in *vocational commercial education* and in *commercial arts education.*
5. The older destructive criticisms of commercial education—elementary, secondary, collegiate—and of private commercial schools is giving place to constructive efforts, e. g., in coördinating commercial work in junior high schools, senior high schools, and colleges, both into a unified sequence, and also with practical business life.
6. Recent developments include extensive preparation for store-occupation, as witness the New York experiment; school credit for supervised business experience; education for foreign trade; and especially the extension of Federal aid through the support of part-time classes, under a liberal interpretation of the Smith-Hughes Act.

In our preceding discussions it has been assumed that the reader understands that girls and women, as well as boys and men may be beneficiaries of the various plans for vocational education—be it agricultural, trade and industrial, or commercial. There are problems of vocational education, however, that peculiarly concern girls and women. Some of these matters we shall take up in the following chapter.

Problems

1. By interviews with officials obtain material and make a chart showing all occupational designations and organization of the complete force of a large firm. Show the steps of possible promotion.

2. Prepare analyses or descriptions of selected commercial occupations listed in the above organization chart. Include what a given worker must *know* and must be able *to do* in order to be efficient in the position.
3. Study a local establishment with reference to provisions for good ventilation, illumination, lunches, seats, hours of labor, orderly supervision, general conditions for physical and mental hygiene.
4. Study the ante-bellum selling methods of the Germans in foreign trade.
5. To what extent should elementary commercial courses be specialized?
6. Collect specimens of printed courses in salesmanship and ascertain modifications necessary for local use.
7. To what extent and how may the "project method" of instruction be applied in elementary and secondary commercial education?
8. Read O'Leary(3b), then study local establishments, and afterwards write a careful report upon the advantages and disadvantages of the department store as a business field for men and for women, respectively.
9. From U. S. Education Reports (1917, vol. II, p. 552), ascertain definitely the variety of systems of shorthand now being used in commercial schools.
10. How may courses in economics and political science of colleges of commerce be correlated practically with business life, and how may civics as a course be similarly modified in commercial work of secondary schools?

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CHAPTER XI

THE PRACTICAL EDUCATION OF GIRLS AND WOMEN

Underlying Principles: Complications of the problem; sex differences; psychology of adolescent girls; individual differences; equality vs. difference; intellectuals, democracy, and home-making; occupational tendencies; terminology; dual responsibility in home-making.

Home Economics; Household Arts Education: (*a*) Definition; (*b*) in elementary and high schools; (*c*) in rural schools; (*d*) in evening schools.

Home Economics; Vocational Home-making Courses: (*a*) Definition; (*b*) phases of home-making; (*c*) part-time courses for housewives.

Industrial and Trade Extension Schools for Women: (*a*) All-day trades schools for girls; (*b*) information needed; (*c*) trade-extension courses.

Applications of the Smith-Hughes Act: (*a*) No sex distinctions; (*b*) half-time instruction; (*c*) evening schools to be supplemental; (*d*) interpretations tentative.

Other Vocational Education of Women: Leake's book; professional training; the woman over forty; chivalric regard.

Summary. Problems. Selected References.

Underlying Principles

Complications of the problem. The formal education of a girl or woman is a more complex problem than the education of a man. The normal woman is usually a home-maker and mother, and in addition she may be an industrial or commercial or professional worker like a man. Unmarried women in industrial pursuits do not as a rule have the full responsibility of home-making; nevertheless by instinct or by habit even the bachelor-woman, more than the man, has to do with the care of home or apartment, with choice and production of clothing, or with preparation of food—if we except from our consideration

the merely ornamental, or parasitic woman. There are other complicating factors involved in the education of women. Race, nationality, geographical location, conventions, law, are potent factors affecting both the employment and the education of girls. The question of sex differences in mental capacities, traits, and physical characteristics, as related to education and to industry is also a favorite theme for discussion in this day of suffrage and the entrance of woman into industrial pursuits.

Sex differences. Data from psychological experimentation tend to favor two conclusions: (1) In the present state of scientific knowledge it would be as dogmatic and undesirable to state that significant sex differences in intellect do not exist, as to state that such differences do exist; (2) experimental psychology has disclosed no sex differences in mental traits which would require a division of labor on psychological grounds.(20) In addition to the meagre literature of experiment and fact bearing upon this question there is also a vast literature of opinion, i. e., of written statements made both by scientific and by literary men, e. g., the writings of the ancients, historians, philosophers, poets, dramatists, as well as of modern writers.

The traditional view running through the ages is that the chief sphere of woman is in the home, and that her aptitudes are for activities connected with the nurture of the young, and for housekeeping, or for wholesome partnership with man the fighter, or hunter, or craftsman. The realities of love and the glamor of romance have this assumption as a foundation. All degrees of emphasis are found in the doctrine of woman as the partner and helper of man. These emphases vary from the brute-like subjection of women among races whose men force them to do all painful drudgery and manual labor, to the other extreme where the negatively good woman is cared for like a fragile piece of Dresden china.

Psychology of adolescent girls. It is not within the scope of this book to set forth the psychology of the very young girl,

or of the adolescent girl, or of the mature woman, or of the "woman over forty." The characteristics, aptitudes, and social relations of each group should be duly weighed in planning vocational courses. Of interest to teachers of secondary education, and to conscientious employers are available studies on the nature of the young adolescent girl, particularly of the girl in the early teens. She may manifest characteristics, many of which will be ephemeral, but some of which are the bases of her whole after-life. Since the publication of President Hall's compendious and pioneer studies of adolescence based upon biological, anthropometric, psychological, and questionnaire data, the literature of adolescence has increased remarkably. Recent studies by Baldwin, Wooley, Healy, Whipple, Hollingsworth, and others, point the way to secure foundations for our teaching regarding adolescence.

In addition to commonly recognized characteristics of the adolescent girl, certain minor psychic abnormalities sometimes observed will not be overlooked by parents, teachers, or good employers, who would give youth a square deal. Some of these abnormalities shade into temporary tendencies of no consequence; others demand the best of mental hygiene. The problem of the psychopathic employee, as well as of the psychopathic student, becomes occasionally a crucial matter, and the prevention of any conditions tending toward dementia is always desirable, both in industry and in education.

Individual differences. The Thirteenth Census counted nearly 9,000,000 single women over 15 years of age, and more than 21,000,000 over 15 years of age who were married, widowed, or divorced. The various age groups, and the different economic groups, present numerous problems in the organization of vocational classes and schools to meet both individual and community needs in the case of girls and women. There must be, for example, courses for girls from 14 to 16 whether they be in school or employed; for girls from 16 to 18, from 18 to 25, from

25 to 40. "Extension home-making education" is a form of continuation work that is useful for numerous groups of women.

In the planning of educational work for either sex one must consider, in addition to attention to community needs, the important matter of individual capacity. Until one measures by physical and mental tests the members of a class or of a supposedly homogeneous group, it is easy to err in the assumption that individual differences in an ordinary class or group are not great. Schemes of promotion and methods of instruction are frequently based upon the false assumption that pupils are practically duplicates.

Personal, characteristic, or individual differences, that are found in boys and in girls, may be inherited qualities, or they may be due to the circumstances in which available educational opportunities differ for the sexes. In general, there are numerous causes of individual differences, e. g., influence of remote ancestry, of immediate ancestry, of growth or maturity, of physical and social environment, of special practice, of health and disease, etc.

Equality vs. difference. Sex differences regarded from the anatomical and physiological points of view, are not altogether matters of opinion and debate. The obvious physical differences of women and men both in structure and in function, the relative early maturity of woman and her maternal capacity, do not demand proof from anatomist or physiologist, for these differences are known to all. The whole question of sex differences in relation to education and vocation has been confused by the tendency to debate the "equality" of the sexes.(11) The matter is not so much a question of equality as it is one of difference. We would not think of comparing as equal or unequal the perfection of a watch or a compass, with the perfection of a locomotive or a ship. In either case, the mechanisms are relatively perfect in themselves, but in each case there are both common, and also unique functions.

Intellectuals, democracy, and home-making. One who reads Mason's interesting study of woman's share in primitive culture and in the beginnings of modern industries, will feel that the two-fold part woman is playing in the home and in industry, is merely a new form of her indispensable usefulness in all generations. The work of the home in the eyes of some girls is nothing more than menial drudgery. Too often, owing to poverty, or ignorance, or selfishness of one or of all members of a family, home-making is little more than slavery. As ancient as Aristotle(5) is the notion that household tasks are necessarily menial. A more prevalent idea, however, to-day is that home-making demands the best fruits of science, and art, as well as of romance and sentiment.

A certain type of pseudo-education has misled some young girls in regard to the aims of woman. Of this type were the "finishing school" and the "young ladies seminary" now happily obsolescent, where girls without sufficient general education were taught to dress, to walk into a parlor with a mincing step, to dabble in music, painting, the theater, and foreign languages. Under the delusion that they were educated, they have been graduated without training in personal hygiene, or in the fundamentals of science, without a hunger for good literature, and, worst of all, with habits of indolence and a craving for excitement and adulation.

Fully as deplorable is the effect of garbled or ill selected college and university courses which some women pursue to their detriment. Half-baked ideas in philosophy as related to religion, psychology, political science, and ethics, ideas which the student may accept as "radical" or "modern," are not recognized by them as merely echoes of Gorgias, or of Zeno, or of Nietzsche. There are imitators of Nietzsche, whose vicious doctrines have been lamented even by some of his own best countrymen, doctrines which helped to poison Germany into war-madness and forced the World to determined resistance.

The writer has encountered disciples of Nietzsche who do not even know that he died insane. They speak with admiration of his beastly doctrines of sex, anti-home, anti-church, anti-hospital, anti-schools, anti-civilization; such disciples affect "all of his audacity without manifesting a spark of his genius," declared Paulsen.(36)

In large universities there is found sometimes a small, minority group of graduate students or instructors of this type. Usually they are not taken very seriously by their professors and seniors. During war-times they fluently used the terms "socialist," and "bolsheviki," and "intellectuals," in grave discussions. Very occasionally a young woman of the type reveals herself. E. g., during the World War a woman student was heard to say seriously: "How absurd is the view that a woman should marry, give up her name and career in order to be a mere helper of a man!" It was mildly suggested first that history shows that the great achievements of men have in most cases been inspired and supported by the mothers, or wives, or sweethearts; and that achievement and work are more important than the glorification of any name, be it of man or woman. "But," retorted she, "think of Nietzsche; he never married!" It would seem that in view of the large success of our universities in producing leaders and their stalwart patriotism, as well as our dependence upon science, some way should be found to purge ourselves of embryo enemies of society and civilization, who are supported by public funds.

By the assertion of plain ideals of American Democracy, the tradition and life of the American home at its best is particularly to be upheld. In the vocational education of women the opportunities for work and for happiness in the home should be promoted at every step. It is not alone in the disappearing types of pseudo-education for women indicated above that there is some danger of perverting woman from her inalienable function of the home,—inalienable because she is born to be mother, sweetheart, sister, whatever else may be her

capacities. The specific training of girls in lower schools for wage-earning occupations also is encompassed by the same danger.

The experience of the New York and of the Massachusetts trade schools for girls amply proves the utility of such schools. Wherever specific trade-training or education of any kind is given to girls, however, the fact must never be lost sight of that the vast majority of women will marry. They who do not marry need for the health and happiness of themselves and others an acquaintance with home-making. True, we are reminded, home may be more an *esprit de corps*, an atmosphere, rather than a house or "furniture and meals." To maintain through good feeling, morals, and efficiency, the satisfaction of home is an excellent objective of teaching for women. The United States Commissioner of Education, P. P. Claxton, has clearly expressed this belief, as follows:

In America at least the home is the most important of all institutions. From it are the issues of life. In the little world of the home children are born and reared. In it they grow to manhood and womanhood. From it they go forth into the larger world of society and state, to establish in turn their own little world of the home in which they grow old and die. Their memories linger around the homes of their childhood; the memories of them held by later generations are associated with the homes of their manhood and womanhood. In the home children receive the most important part of their education. In the home must be established their physical, mental, and moral health. The experiences of home constitute the raw material of the education of the schools. The character and the teaching, conscious or unconscious, of the home determine in a large measure their attitude toward all other institutions and toward all the relations of life. From the home parents and older children go forth to their daily toil, and to the home they bring the products or the earnings of their labor, to be expended, wisely and prudently or unwisely and imprudently, for food, clothing, shelter, and the other necessities and luxuries of life. For most people the home is the beginning and end of life. All their activities proceed

from it and return to it. Therefore, of all the arts those pertaining to home-making are the most important and of all the sciences those which find their application in the home, making us intelligent about the home and its needs, are the most significant.

If the schools are to assist in making us intelligent about the life we live and the work we do, they must provide liberally for instruction in these arts and sciences. Within the last two or three decades, educators and people generally have become conscious of this fact as never before, and gradually the schools are being readjusted to meet the new demands.

Aristotle said that "those occupations are most truly arts in which there is the least element of chance; they are the meanest in which the body is most deteriorated, the most servile in which there is the greatest use of the body, and the illiberal in which there is the least need of excellence."(5) To develop home-making to a true art is a specific effort of contemporary education. Profiting by scientific methods of observation and experiment, experts in home-making interested in teaching, or in imparting their experience to others, have systematically studied the field of woman's work in the home. Thus this field of life-work, which to-day engages the daily labors of more than twenty millions of women in America, is illuminated. Science is removing unnecessary drudgery, long hours. Industrial arts and invention are contributing mechanical appliances to the service. Chemistry and hygiene are increasing health and strength. The good home-maker of today, rich or poor, possesses the graces of the refined hostess and of the stimulating, pleasing conversationalist. Music and art are making houses attractive, and civic interests are supplanting isolation and selfishness in the homes of the country and of the city. The manifold possible activities of a woman in the home—as mother, wife, social companion, business partner, trainer of children, protector of health, etc., have been analyzed and charted. Scores of good schools ranging from elementary to university rank make it possible for a

girl to obtain the coveted preparation for any or all of these activities in home-making.

Mrs. Hickok has interestingly charted the scope of work of the home-maker. The chart-analysis is the more interesting because modern industrialism has taken from the family group so many productive processes, forcing the man-partner out of the home in order to obtain an income and leaving the woman-partner in the home largely to deal with consumption and management.(18) A sad feature is that long hours and fatigue in industry often leave inadequate opportunity for congenial companionship in hours of recuperation.

Occupational tendencies. The percentages of gainful workers (total 38,167,336) who are females in the major occupational groups are: Agriculture, 14.3; Extraction of minerals, 0.1; Manufacturing and mechanical, 17.1; Transportation, 4.0; Trade or commerce, 12.9; Public service, 3.0; Professional service, 4.1; Domestic and personal service, 67.1; Clerical, 34.2. Home-makers (women) not working for wages probably constitute a third (22,000,000, estimated) of all workers.

The limited range of occupations which conventionally may be in mind for women is illustrated by some data obtained from the parents of about six thousand pupils, all of the pupils being 13 years of age or older. With the help of teachers the parents were asked to indicate both what the boy or girl wished to do or be, and also for what occupation the parent thought the son or the daughter best adapted.

The data were obtained in the largest city of the South, where there exist separate schools for white and for negro pupils. The study in many instances showed failure of parents and of children to agree upon the matter of proposed occupation. While we must not stress unduly the significance of the replies received, nevertheless they are interesting to show the range and character of occupation in the minds of the parents and of pupils under the given conditions for boys and for girls, for whites and for

negroes. In condensed form the results disclose the following numbers of boys and of girls over 13 years of age in the elementary schools, desiring respectively the occupations indicated.

White Boys: Total 2, 244. Range of occupations in minds of boys, over 100. Boys undecided or not answering, 595. Most commonly preferred occupations: Bookkeeper, clerk, stenographer, etc., 448; engineer, 336; machinist or mechanic, 141; doctor, 92; lawyer, 69; electrician, 67; carpenter, 48; architect, 42; plumber, 32; operator, 27; artist, 24; musician, 19; farmer, 18; merchant, 17; druggist, 17; salesman, 16; teacher, 13.

White Girls: Total 2,821. Range of occupations, 56. Undecided or not answering, 878. Most commonly preferred occupations: Stenographer, bookkeeper, clerk, etc., 753; teacher, 522; dressmaker, seamstress, etc., 361; milliner, 73; housekeeper, housework, 38; musician, 35; nurse, 28; operator, 16; druggist, 7.

Negro Boys: Total 244. Range, 33. Undecided, etc., 10. Most commonly preferred: Carpenter, 49; brickmason, 32; mail carrier, 32; mail clerk, 25; doctor, 20, druggist, 10; blacksmith, 8; mechanic, 7; teacher, 7, chauffeur, 5; painter, 4; typist, 4; farmer, 3; musician, 3; slater, 2; shoemaker, 2; tile setter, 1; tailor, 1.

Negro Girls: Total 499. Range, about 20. Undecided, etc., 26. Most commonly preferred: Dressmaker, 211; teacher, 170; seamstress, 37; nurse, 26; stenographer, 7; hair dresser, 6; musician, 5; cook, 3; housework, 3; caterer, 2; artist, 1.(19)

The kind of occupations actually entered by girls leaving school is of course largely determined by local opportunities. For example, in the investigation made in Worcester, Mass., a typical manufacturing city of New England, it was found that of 727 girls, 22 per cent entered mercantile establishments, 75 per cent manufacturing establishments. Machine operating trades took 38 per cent, 28 per cent entering corset factories. The different manufactures entered by 549 girls were as follows:(42)

TABLE XIX

MANUFACTURES INTO WHICH GIRLS GO FROM SCHOOL IN WORCESTER, MASS.

	Girls
Corsets and accessories	206
Textiles, spinning, knitting	104
Metal trades	71
Paper goods	46
Clothing, factory product	36
Shoes and leather	33
Food and drug products	21
Millinery	8
Novelties	5
Dressmaking	3
Brushes, combs, rubber	3
Laundry	4
Printing	2
Piano Company	1
Vaudeville	1
Miscellaneous	5
Total	549

The ages of these 727 working girls of Worcester are tabulated in the table below. Sixty per cent were only 14 years of age.

TABLE XX

GIRL'S AGES LEAVING SCHOOL IN WORCESTER, MASS., 1909–1910

Age	*Number*
Under 14 years of age	7
14 and under 15	431
15 and under 16	177
16 and under 17	24
17 and under 18	4
Unclassified	84
Total	727

War-emergency work changed the occupations of thousands of women who took the places of men released for service on the firing line. Upon the farm, in manufacturing establishments, in transportation, in Red Cross and Y. W. C. A. and church work, in nursing, teaching, etc., the numbers of women increased in England, France, and America. One can not predict how permanent this tendency for women to do the work of men will be. During thirty years preceding 1910, the general occupational tendencies of women have been toward trade and transportation (increase sixfold) and professions (increase over 20 per cent), and away from agriculture, and domestic and personal service (for wages). There has been a slight decrease in the number of females in manufacturing and mechanical pursuits, due doubtless to improved legislation regarding factory employment of girls and women. These are generalizations merely for the whole country, and should not be interpreted as applying exactly to any one community.

Terminology. There is considerable variety in the terminology of classes, courses, and schools related to the vocational education of women.(41) We find the expressions: Household economics, household arts, home economics, domestic science, vocational home-making schools, recreational courses, industrial arts schools, practical schools, trade schools, extension trade courses, all-day industrial schools, part-time schools, evening schools, professional schools, etc. Most of these expressions demand no further definitions than those given in preceding discussions. Some of the terms, however, demand explanation and illustration, as concerns the education of girls and of women. In this chapter it is our purpose to emphasize phases of education designed to promote home-making. The general character of vocational schools and the problems of education in trades and industries, both for boys and for girls, have been indicated in the preceding chapter. Agriculture, trade, industrial, and commercial education as provided for in the Smith-Hughes Act applied

both to boys and to girls. The only other term used in the Act is the generic expression *home economics* which will apply chiefly to the education of females.

Dual responsibility in home-making. However, there is a dual responsibility in home-making. We have recently been emphasizing woman's need of knowledge of municipal and civic affairs as the clamor for suffrage increased. Similarly it is time that phases of home-making should be made systematically a part of the education of boys and men. Andrews shows that advance has been made in the teaching of certain phases of home economics to boys.(41) An increase of man's efficiency in the home, together with a revival of the best sentiments of chivalry are specific aims worthy of a definite place in a boy's education.

Home Economics: Household Arts Education

(a) *Definition.* Household arts education can be made a large factor in the training of practically all girls. "Household arts education includes all those forms of instruction and training based upon the occupations of the home or household, and which are designed to promote higher standards of appreciation and utilization in the field of activities associated with home-making, to promote right conceptions of the social importance of the home as a nursery of childhood and a haven for the wage-earners of the family, and to show wherein the various arts and sciences have practical application in domestic life. Hence household arts education can be made a large factor in the liberal education of womanhood."(43)

In some respects there are sharp differences of aims and of methods between household arts as a part of general education, and vocational home-making courses. Snedden fears that "So great a fund of sentiment and vague aspiration has recently been accumulated in connection with all actual or proposed educational procedures based upon the activities of the home, that there are now thousands of people with the best intentions who

are greatly in danger of being induced to take the shadow for the substance in home-making. On the other hand, there are hundreds of others, at least, who see competent home-making made possible only on condition of the mastery of a bewildering mass of technical knowledge, such as would prove impracticable even for a specialist, let alone the hurried little woman who, typically, must maintain a home and in it provide for the rearing of four or five children and the harboring of the wage-earners of the family."(12)

The expression *household arts* is growing in use especially in public schools to denote home economics courses both in the elementary and in the high schools. The National Society for the Promotion of Industrial Education favored the use of the term to denote those courses which resemble vocational home-making courses but which belong more properly to the field of general education. Such courses in household arts may make contributions of a definitely practical nature, but for the majority of pupils they function simply as enlargement of experience and improvenent of capacity for wise utilization.(12)

(b) *In elementary and high schools.* The aim of teaching home economics in the elementary schools is to promote the best family and home life as a foundation of democracy. It is in the elementary schools, before the majority of pupils quit the schools, that this fundamental work must be done. In the elementary grades the girl must be taught the principles of healthful living for herself, her family, and her community, and the relations of health to individual and social well-being. Right convictions and attitudes of mind can be cultivated regarding the relation of the good home to economic, social, æsthetic, scientific, and religious problems. The girl must also be trained *to do* as well as to *know why*. Cooking in test tubes may be fitting for researchers in universities, and the making of pretty little things which are useless may be amusing,—but such tasks are nonproductive and out of place as a rule in elementary and high schools.

The suggestions of Misses Cooley, Winchell, Spohr and Marshall(10) for household arts in elementary grades, include work in home economics for grades one to six. They hold that the work may be taught by the grade teacher under the supervision or advice of the industrial arts supervisor. E. g., a study of food, clothing, and shelter may be given a place in the first six grades. In well-organized household arts courses for the elementary school there must always be actual participation in some of the processes in order to give appreciation of the labor involved and a degree of skill commensurate with the ability of the child, and the work should be related with other school subjects. Household arts, or home economics, will appear as a separate study for the first time in the seventh grade, or in the first year of the junior high school. The actual content will vary according to local conditions, organization of school, and aims. The above writers are opposed to limiting the household arts work too strictly, e. g., merely to a few of the home activities, such as cooking and sewing, in the seventh and eighth grades, or in the seventh, eighth, and ninth grades of the junior high school. They would include subject matter and processes commensurate with the junior high school girls' ability to perform and appreciate. Definite suggestions given by them for organization include:

Upper grades (seventh and eighth) and junior high school (years seventh, eighth, and ninth)—

(*a*) Food in relation to its production, selection, cost, care, preparation, and service. (Special emphasis on conservation under present conditions.)

(*b*) Clothing in relation to its cost and selection from the standpoint of hygiene and personal appearance; its care and repair; garment construction with as much of textile study as the problem in hand warrants.

(*c*) Shelter in relation to its cost, the choice of its furnishing, and care.

(*d*) The family,—the relation of its members to each other and to the community; division of income; budgets; care of individual members.

Senior cycle (years tenth, eleventh, twelfth). The work in this cycle will be more intensive along given lines and will also afford opportunity for broader development in the entire field. The work will be organized into smaller units of subject matter and will center around some specific idea or activity such as: cooking; sewing and dressmaking; dietetics; home nursing and first aid; home management; home furnishings; care of infants and children; laundering; millinery; textiles; costume design, etc.

It will readily be seen that should the 8–4 plan of organization maintain, an arrangement of subject matter on the same basis could be developed.(10)

(c) *In rural schools.* The progress of rural education has developed a beneficial tendency to adapt elementary household arts instruction to local conditions. The Department of Agriculture at Washington publishes many helpful farm bulletins. Under the auspices of the United States Bureau of Education, Miss Lyford has worked out in considerable detail three constructive courses in home-making, courses prepared especially for use in the elementary rural schools, which may prove to be a boon to many a teacher and superintendent. A much abbreviated outline of the contents of her illustrated report is as follows. Her lessons for each topic are explained in detail, with illustrations, in the original report, which is obtainable from the Superintendent of Documents, Washington, D. C.(25)

A. Twenty seven selected references for a home economics library for the rural school.

B. Twenty lessons in the care of the home for rural schools. E. g. (1) Arrangement and care of the kitchen, (2) care of cupboards and utensils, (3) care of food, (4) disposal of waste, (5) making soap, (6) setting the table, (7) waiting on table, (8) and (9) cleaning of a room,

(10) care of bed room, (11) care of lamps, (12) prevention of pests, (13) removing stains, bleaching fabrics, and setting colors; (14) washing dish towels, school curtains, etc.; (15) ironing; (16) and (17) care of the baby; (18) cost of food, clothing, and home; (19) how to keep accounts; (20) care of the exterior of the house.

C. Twenty lessons in cooking for rural schools: (1) Discussion of foods and cooking, (2) preparing and serving vegetables, (3) values of carbohydrates, (4) fruits and vegetables, (5) fats and oils, (6) cereals, (7) classification of foods, (8) planning and serving of meals, (9) milk, (10) soups, (11) eggs, (12) simple desserts, (13) batters, (14) do, (15) meat, (16) baked pork and beans, or baked cowpeas,—corn-dodgers, (17) batter cakes—plain yellow cake, cocoa, coffee, tea, (18) yeast bread, (19) serving a simple dinner without meat—baked omelet, marcaroni and cheese, (20) sugar.

D. Twenty lessons in sewing for the rural schools: (1) Preparation for sewing, (2) and (3) hemming towels, (4) to (8) bags, (9) darning stockings, (10) patching, (11) to (16) cutting out aprons or undergarments, (17) and (18) methods of fastening garments, (19) padded holder for handling hot dishes, (20) cap to wear with cooking apron.

(d) *In evening schools.* Groups in marked contrast to the girls taught in rural schools are the throngs of working girls and women in our cities. For these latter, evening courses in household arts are conducted in many cities. Often they are led to attend evening classes in order to learn "how to supply their personal needs in relation to food, clothing, and right living, rather than for the definite purpose of preparing for, or increasing their efficiency in, their vocations." For the sake of expediency the courses for such students are classified separately from those having a clear-cut vocational aim. Unavoidably such household arts courses show overlapping with vocational homemaking courses, and with trade-extension courses. It is gratifying that many young women attending the household arts courses in evening schools "find in them the inspiration for more than incidental study, or acquire something more than the new dress which furnished the original incentive."

Attention is directed to these practical points concerning evening courses in household arts:(12)(30)

A. Teachers of such household arts courses must have had experience in the branches they are to teach.

B. Equipment is an important item. It is doubtful if the best results in accomplishment and initiative can be secured unless the home-unit of equipment is provided, in addition to the equipment of laboratory type for cooking, sewing, and millinery. The Massachusetts State Board of Education has recommended the following equipment for household arts education in evening courses.

Sewing and Dressmaking Equipment (Minimum)

Group of 20 persons; average attendance, 15.

1. There should be comfortable chairs.
2. Thirty feet of cutting space at least (5 tables 4 by 6 feet, or the equivalent).
3. One sewing machine to 5 persons,—3 machines.
4. One flatiron.
5. One ironing board.
6. Good lighting. (The light should be direct and within 1 to 2 feet of the work; 1 light for every 4 feet of table space.)

Millinery and Embroidery

1. Comfortable chairs.
2. Three tables, standard size, 3 by 6 feet, or equivalent.
3. Good lighting. (The light should be direct and within 1 to 2 feet of the work; 1 light for every 4 feet of table space.)
4. Iron and ironing board; facilities for steaming materials. In the case of embroidery it is an advantage to have facilities for stamping and laundering.

Cooking

1. Gas or coal ranges. Unless supplemented by individual gas stoves, which are not recommended, but which are found in most school buildings, one coal stove and two gas ranges should be provided. There should be at least two full-sized ranges, whether there are individual burners or not.

2. Utensils should be family size.

3. Work tables of a size and number to give sufficient room for independent work,—30 feet at least.

4. Good lighting.

C. Homogeneous grouping is desirable. Informal methods of "trying out" of pupils may be necessary. To some extent pupils will group themselves according to choice. Pupils are not easily classified, whether the criteria of occupations, home duties, interests, or abilities, be used. The size of the class should be limited, say to 15 for one teacher or to 25 for one teacher and an assistant. Painstaking registration will obviate numerous difficulties, especially if made one week before the classes are to begin, and if supplemented by personal interview.

D. "The product in household arts should closely approximate acceptable product of the home in cookery and commercial product in garment making and dressmaking." It is usually for personal use and made from materials furnished by pupils.

E. Advisory committees serve a useful purpose, when well chosen. Interest and advice of successful housekeepers and mothers with the right attitude may add zest and reality to the work.

F. Short-unit courses are highly desirable for household art instruction. "Women who work as wage earners from eight to ten hours a day find it difficult to attend evening classes during the long term of thirty to sixty or more evenings. The wage-earning occupation frequently makes unusually heavy demands during rush seasons. Attendance upon classes during these times is interrupted, and frequently the course is given up because of the delay in class work which results from the interrupted attendance. The short courses give pupils who could not attend a long term the privilege of completing one problem with a fair degree of satisfaction. Another course may be taken after an interval if interruption is necessary. By this plan the needs of a number of groups may be served." (ibid.)

The Massachusetts Board has made available concrete suggestions for two types of short unit courses in household arts for evening schools:

1. The non-progressive plan. Each course is a unit in itself and should be organized at any time that there is sufficient demand.

2. Progressive unit courses. A continuous series of unit courses,—never repeating a course, but passing on from one to another in a progressive series. Members may pass from course to course, or drop out at the end of one course. This is possible when each course is an entity and the courses also are progressively related.(30).

The National Society for the Promotion of Industrial Education has also drawn up suggestions for various types of household arts courses suitable for evening classes. The list is seen below. Each item admits of further subdivision, and the list as printed is not intended as an outlined course of study.(12)

Dressmaking and Garment Making: Making of plain undergarments (plain sewing for beginners). Making of lingerie, hand sewing and machine sewing. Plain shirt waists. Fancy shirt waists of lingerie fabric or silk. Plain skirts. One-piece dresses of cotton or linen (tailored or semi-tailored). One-piece dresses of wool or silk fabric. Use of commercial patterns for garment making and dressmaking. The business woman's outfit,—what she should wear and what she should avoid. Cleansing and renovating clothing. Remodeling and altering dresses, waists, and skirts.

Millinery: Renovating and remaking last season's hats. Planning, making, and trimming of hats. Making of fancy trimmings and ribbon bows.

The Personal Budget. How to spend and how to save. Apportionment of earnings for living, clothing, car-fare, the noon meal, recreation, church and philanthropy, gifts, summer vacation, insurance and savings.

Cookery: Nutritive value of foods. Canning and preserving. Preparation and serving of the evening meal by the class which has come direct to the school from the factory, the store, or the office. Practical cookery by special courses. Breads,—yeast-raised rolls, muffins, and biscuits, yeast-raised breads. Preparation of meats, meat substitutes, and left-overs. Vegetables,—preparation, cooking, and serving. Salads. Practical work in planning menus. Cost of foods in con-

nection with each of the courses mentioned above. Desserts,—custards, hot desserts, frozen desserts, cakes. How to choose the noonday lunch and how much to pay for it.

Home Economics Education: Vocational Home-making Courses

(a) *Definition.* "Vocational homemaking education includes those forms of vocational education the direct object of which is to fit for home-making as practiced by the wife and mother in the home, and also for some specialized forms as practiced by household employees, housekeepers, and other wage-earning assistants to the homemaker."(43)

Vocational homemaking courses appeal to the following groups of pupils:

1. Girls who remain at home.
2. Women who expect to marry.
3. Mothers and housewives.
4. Young women preparing to be specialists in the management of institutions, hospitals, etc.
5. Paid employees of the household.

It is probable that from 60 to 80 per cent of all women eventually become home-makers. Thousands of women from 16 to 25 years of age spend years in wage-earning pursuits, after which they enter into home-making as a career to be followed for many years or for life. Household arts as described above evidently can be made a valuable feature of the general education of all girls. Vocational education for home-making aims to produce forms of power for the wife and mother living under normal family relations as well as for trained workers in homes and institutions. Vocational home-making courses should not be limited to home-makers, professional housekeepers, or maids whose work may be one or more phases of home-making. In order to avoid confusion, however, a distinction should be maintained

between those who are trade-workers during the day, and those who are home-makers. All girls and women who desire instruction in the activities of the home should be offered somewhere opportunity to take modern home-makimg courses.(12)

(b) *The phases of home-making.* Analysis of home functions as they may be shared by mother and father is a useful kind of study. Other analyses have been written from the point of view of the vocational home-making courses to be offered. Memoranda for such courses may be obtained from the Children's Bureau of the U. S. Department of Labor, from the U. S. Department of Agriculture, and from the National Society for the Promotion of Industrial Education. In the following outlines the items named admit of many subdivisions but even in abbreviated form exhibit the wide scope of organized courses for vocational home-making.

LIST OF VOCATIONAL HOME-MAKING COURSES

1. *Foods*: Purchase and care of foods. Preparation of three home meals. Serving of meals. Preparation of the school or the dinner pail luncheon. Food for infants, growing children, and aged people. Nutritive value of foods. Invalid cookery. Use of meat substitutes and left-overs. Canning and preserving. Planning of menus. Special courses in types of foods as meats, bread, vegetables, salads, desserts, and the like. Use of the fireless cooker. Pure food legislation.

2. *Care of the House:* Simple methods of cleaning wood, metal, china, glass. Use of disinfectants, deodorants, and exterminators. Cleansing of pipes, traps, drains. Care of refrigerator. Cleaning the cellar. Cleaning furnished rooms. Labor saving devices and equipment.

3. *Health:* Personal hygiene. Care of infants and children. Home-nursing. First aid to the injured. Food and clothing in their relation to health. Municipal health regulations.

4. *Clothing:* How to choose underwear,—what to buy,—what not to buy. Purchase of ready to wear clothing. Making of infants' and children's clothing. Making of shirt waists, skirts, and house dresses. Use of commercial patterns for garment making and dressmaking.

Mending and remodeling. Renovating and cleansing of clothing. Laundering. Millinery,—renovating and remaking hats,—making and trimming hats.

5. *House Planning and Household Decoration:* Arrangement of the house for comfort and efficiency. Arrangement of a convenient kitchen. Selection and arrangement of furniture for the living room, dining room, and bed rooms with reference to comfort and attractiveness and to economy of time in its care. Draperies. Wall finishes. Floor coverings and finishes. Renovation of household furnishings.

6. *Budget:* The budget,—personal expenses. The family budget. How to plan and keep expenditures within the household budget. Household accounting. Teaching children the value and use of money.

7. *Household Management.* Scheduling the work of the household. Division of labor and directing others,—the children of the family who must learn to work and to take responsibility. Directing household employees. Short cuts to be used in the household work. (ibid).

(c) *Part-time courses for housewives.* While it is undesirable to commercialize the household, many housewives desire to compete with industry in the sense that they wish to produce dresses or clothing of as good style as and by efficient methods comparing favorably with those of the tailor or store. Millinery made at home must also compete with trade standards. Much has been learned of value to the housekeeper from the experience of efficiency methods in laundries, in tea room and cafeteria service, and in the business of budget-making.

Part-time courses for housewives should be unit-courses. The experience of Massachusetts shows that in the classes for housewives, attendance for a school year of twenty weeks is uncertain, and that the mortality of such classes is great.(30) Miss Murtland has explained how part-time courses chiefly in the day time, may reach three well defined groups: (1) the girls who remain in the home and assist in the household duties—girls who do not become wage-earners outside of the home; (2) girls who become wage-earners and are removed from any but

incidental participation in household work, which under right conditions furnishes the best kind of training; and (3) women engaged as home-makers—the wives and mothers.(34)

Industrial and Trade-Extension Schools for Women

(a) *All-day trades school for girls.* Vocational industrial courses for girls may be conducted as departments in high schools, or in a separate girls' school. The Manhattan Trades School for Girls in New York City has been foremost of the type of school that trains girls to be self-supporting as quickly as possible. For our present purpose it suffices to call attention to it as one concrete example of schools such as the Boston Trades School for Girls, the Worcester Trades School for Girls, the Hirsch School, etc. It was originally started as a philanthropic institution but has been taken over by the New York City school system. Any girl between the ages of 14 and 17 who desires trade education may be admitted upon graduation from a grammar school or upon examination by the principal, and upon specific recommendation of the head of the school last attended. The courses are practically all short-time or unit courses. The popularity of the school has caused recently an excess of applications far in advance of the capacity of the school. The report for the year ending July 31, 1916 shows these data:

Average enrollment	722 girls
Average attendance	632
Girls in different departments:	
Dressmaking	491
Millinery, lamp shades and fancy feather making	70
Sample mounting and French novelties	54
Garment operating	65
Straw hat operating	19
Embroidery operating	18
Kid glove operating	5

The Manhattan School offers all-day courses, trade-extension, and part-time courses, and also evening sessions in drafting and pattern cutting, waist and skirt draping, straw hat operating, garment operating, operating on hemstitching machines, on embroidery machines, and on scalloping and tucking machines, etc.(28)

(b) *Information Needed.* In the establishment of vocational industrial courses for girls and women, more than usual care is demanded. Adequate preliminary information concerning the nature of the occupations to be articulated with the school is needed. C. A. Prosser in connection with the Worcester study preparatory to a trade school for girls, emphasized the value of information of these kinds: (1) Concerning the great army of young girls who go out to employment as soon as they have passed beyond the reach of the compulsory law; (2) the number of girls and women who are employed in undesirable industries; (3) the lack of opportunity for advancement and better wage earning which confronts the average female wage worker; (4) the low intellectual status and ideals of the typical factory girl; (5) the kinds of industries which retarded and backward girl pupils enter; (6) the instability of female as well as male workers in many industries; (7) the fluctuating character of their employment; and (8) the low wage which most of them are able to earn.

(c) *Trade-extension courses.* The Report on Vocational Secondary Education prepared by the Committee of the National Education Association contains this definition: "The extension evening vocational school is a school in which a young person already employed in some occupation receives, during evening hours, vocational education in subjects closely correlated with the work which he follows during the day, and calculated to assist him toward greater efficiency or more advanced work in that calling."(43)

Extension trade teaching is designed to give a worker already employed more and more skill and knowledge related to his

or her vocation, and thus to facilitate promotion. Low wages are in part due to low skill and inefficiency. It is not enough to give a young worker compelled to enter industry a good start; to supplement early training and to facilitate progress is a worthy object. Doubtless long after the World War we will encounter the problem of assimilating thousands of untrained women who will enter this country to compete with our present women workers. The necessity of meeting this competition is an added incentive to multiply our trade extension classes for women. Such classes will help to meet the needs of these groups: (1) *Untrained and unskilled workers*, e. g., errand girls, sewers on hooks and eyes, girls who run ribbons in garments, helpers in various factories. There are many capable women who have entered industry without any vocational preparation. (2) *Workers who already have had training in a vocational school.* Graduates of the Boston Trade School for Girls and of the Manhattan Trade School often have returned for evening trade-extension courses.

The National Society for the Promotion of Industrial Education which issued a helpful bulletin of practical directions for the conduct of trade extension courses for girls and women, advised as follows:

Trade-extension courses should be given for all occupations in which numbers of girls and women commonly find employment. The courses may be grouped as follows into (A) those which deal with the practice and technic of the trade; and (B) those which deal with related knowledge.

A. *Courses in the practice and technic of the trade should include:* 1. Custom Sewing Trades: Dressmaking. Children's clothing. Draping. Drafting, cutting, and fitting. Designing for trimmings. Costume design. Lingerie. 2. Millinery: Preparing and making. Trimming and copying. Designing. 3. Factory Garment Making: Muslin underwear. Cotton dresses and waists. Silk and chiffon dresses and waists. Special machine operating such as: Buttonholing, Scalloping,

Hemstitching, Tucking, Embroidering. 4. Straw-sewing. 5. Corset-making. 6. Glove-making. 7. Cookery. Cooking for lunch room, tea room, or cafeteria. Fancy cookery for food shops. Catering for special occasions. Preserving and canning. Dietetics and sick room cookery—a trade-extension course for nurses. Fundamentals of cookery. 8. Table service and waitress work. 9. Care of the Home and the House. House wifery. Cleaning processes. 10. Laundry work.

B. *Courses dealing with related knowledge designed to supplement courses in practice and technic of the trade should include:* 1. Arithmetic related to the daily occupation. This, in some instances, is ordinary business arithmetic; in others, it is the application of arithmetic to special trade problems. 2. Science as related to the trade. 3. Art as related to the trade. 4. Spelling and business English. 5. Textiles as related to specific occupations. These courses may again be subdivided to meet the needs and aims of particular groups of pupils.(12).

Applications of the Smith-Hughes Act

(a) *No sex distinctions.* In the text of the Smith-Hughes Act no reference was made to sex. The privileges extended in agriculture and in trade and in industrial education apply in principle equally to males and to females. Special reference, however, was made in the text of the Act, although not in the Title, to home economics, a field that is almost entirely woman's.

(b) *Half-time instruction for practical work.* Section 11 of the Act provided as follows:

". . . That such schools or classes giving instruction to persons who have not entered upon employment shall require that at least half of the time of such instruction be given to practical work on a useful or productive basis, such instruction to extend over not less than nine months per year and not less than thirty hours per week." (Sec. 11.)

". . . That for cities and towns of less than 25,000 population, according to the last preceding United States census, the State board, with the approval of the Federal Board for Vocational Education,

may modify the conditions as to the length of course and hours of instruction per week for schools and classes giving instruction to those who have not entered upon employment, in order to meet the particular needs of such cities and towns." (Sec. 11.)

(c) *Evening schools to be supplemental.* The important Section 11 of the Act also provided:

". . . That evening industrial schools shall fix the age of 16 years as a minimum entrance requirement and shall confine instruction to that which is supplemental to the daily employment; . . ."

The interpretations of the Federal Board gave broad application to these provisions. They admit to evening classes both girls and women in industry and in the home. E. g.: "The evening school instruction must be given to those whose work is such that the skill or knowledge taught helps the worker in her present-day employment to greater efficiency, better wages, or promotion. This will admit to such classes those who are engaged to any extent or in any way in the performance of household duties."

(d) *Interpretqtions tentative.* The Federal Board while issuing during its first year of organization a "statement of policies" did so with the reservation that such statement was "preliminary and tentative." The various interpretations, some of which we have cited in preceding chapters, will be of some historical interest as indicating the initial tendencies in the administration of the Act, whatever may be subsequent modifications. The reader should consult the published reports of the Board for detailed and later statements of policies and interpretations.

Other Vocational Education of Women

Leake's book. Since the preceding lines were written the writer has seen for the first time Leake's valuable book on the vocational education of women.(24) Leake's practical discus-

sion of education for the home and of women in industry outside of the home, at present renders superfluous a more extended presentation in these pages of this twofold problem.

Professional training. It is not within the scope of our present study to consider the question of the professional education of women. In our country, in gratifying distinction from Germany, women have for years been given widest opportunity for study in our State Universities, and in endowed institutions. While the relative numbers of women engaged in law, the ministry, and medicine are small, the numbers are increasing. Other professions are being taken up by women, with the enlargement of social needs and opportunity, e. g., teaching, secretaryship, librarianship, dietetics, institutional management, authorship, social work, nursing, art, music, research. In the field of buying and selling,—commerce, especially in the department store, women are finding many varieties of employment. Vocational training in the modern department store is an interesting topic to which we refer in another chapter.

The woman over forty. What shall the well-to-do woman over forty who has reared a family do? What shall the hard-worked wage-earning woman over forty do, when the incessant grind of machinery or of typewriter, or of teaching, has begun to cause deterioration of body and of hope? What shall the woman over forty do, who, untrained for any service, suddenly finds herself forced to earn a living? The World War has caused this cry to rise from a million women in our own country and abroad. Indeed, during the absence of the soldiers it very quickly arose in the lives of thousands of women over forty. The editor of a metropolitan daily thus illustrates the problem:

> When she was a girl she was given, as a rule, no training in productivity, but she could earn her keep, nevertheless, as a salesgirl or in a factory. She married, and for years she has worked hard, but still without training. Her husband is dead or incapacitated, and the sons she had depended on have enlisted. Now, helpless outside a house, she

faces want. She may be foreign or American, from any one of a half dozen different strata of society, gently bred or used to scrubbing, but she has the one common characteristic—she is just as untrained as she ever was, and she has lost the great asset of youth.

All the talk about her is unconstructive. One constructive suggestion has been made, it is true, many times. She may go into domestic service. She does know cleaning and cooking, as a rule, in a sort of rough family fashion—sometimes even thoroughly. But hers are not the traditions of domestic service except in her own kitchen. She is not used to the feel of it. And, on the other hand, she is too set in her ways to be malleable by a mistress. She lacks trigness as a maid and teachability as a cook.

Has war been needed to teach us that her lack of training has been a wicked thing? No fault of hers; tradition has been against her there also. But why should a woman who marries be regarded as having dropped out of the ranks? You see the result in college women as well as in women who never saw the inside paneling of a high school door. The college wife petrifies in thousands of cases; her mind gets closed to new ideas, and her power to acquire even information leaves her. And so the country loses what a democracy requires above all things—plasticity in its citizenship. Her husband continues for many years to grow in possibilities; he is capital drawing interest. She is just a note, a promise to pay never redeemed, and by and by she becomes outlawed and uncollectible.

Every daughter, rich or poor, from now on ought to be trained if possible *before* marriage and taught to keep on at her training, so far as circumstances permit, *after* marriage. We shall have a world safe for democracy when the war is over, but not safe for the uneducated. The international economic struggle is not going to be child's play or undirected mass-inertia. A propaganda of education for the married woman is needed, and meanwhile a clear recognition of our tremendous economic error, and community and governmental action to repair it as best we may.(47)

If they who ignored, a generation ago, the demands for adequate vocational education as a phase of public education, had opened their eyes and ears, or had abandoned the fetich of

isolated aims of "culture," or "utility," or "discipline," or "knowledge," etc., and general bookishness in the education of girls and of boys, without an ultimate, higher aim, our democracy would have been better prepared for the pursuits of peace and for the imperative, practical demands of a war for world liberty. The helplessness of some women to meet without injury the legitimate demands of the home and of industry, is perhaps no greater than that of our millions of men who have existed only by crude or semi-skilled labor in a land whose resources challenge intelligence and skill, and where the rewards of intelligent labor are greater than anywhere else in the world.

Chivalric regard. It is claimed that the entrance of a woman into business tends to dissipate something desirable in her attractive qualities of womanhood. In many instances this has been sadly true. However, the effort in itself to earn an honest living is promotive of strength and beauty of character—qualities demonstrable in hardworking women. The daily attitude of boys and men is an educative factor for good or bad in women-workers. One thing needed is for boys and men in business and industry to cherish and practice a little of that old sentiment called chivalry. Competition, efficiency, often must ignore sex differences and particularly superficial sentiment. But there is a sentiment deep and indispensable, the feeling that leads to the protection and gentle treatment of mother, sister, wife—and all women. When men or women, including misanthropes and the unsexed, lose or scorn this best heritage of chivalry, life becomes not practical but brutal.

Summary

In the present chapter we have arranged our discussion under six topics:

1. Underlying or general principles of the practical education of women are derived from the facts of sex differences, the relatively early maturity of girls, the question of intellec-

tual and physical equality in distinction from the matter of difference in the sexes, the inadequacy of some ill-adjusted curricula and schools for the needs of women, and the fact that women although not engaged in a very wide range of industrial and commercial occupations like men, as a rule present a more difficult problem of vocational education than do men, namely, preparation both for wage-earning occupation and also for home-making.

2. Household arts education, a bulwark of the home, should be made a large factor in the education of all women, whatever their station or occupation in life. It is offered appropriately in elementary, secondary, day and night schools as a vital element in the program of universal education.
3. Vocational home-making courses are not so clearly distinct from household arts education as is vocational industrial or trade education from industrial arts. They appeal to women who expect to marry, girls who remain at home, housewives, and also to paid employees and specialists in the management of institutions.
4. Girls and women in business may increase their occupational skill and their wages by attendance upon appropriate trade-extension courses, and prospective female workers in industry profitably may attend all-day trade schools, as in Worcester or New York.
5. The Smith-Hughes Act opened to girls and women all of the privileges offered to boys and men in the matter of agriculture, trade, industrial, and commercial education, and in addition opened new avenues of coöperation and financial support in the field of home economics.
6. Contemporary literature attests the vigorous effort to improve opportunities for the vocational education of woman—a movement mightily stimulated by the remarkable activities of women during the World War. New problems appear such as, how can occupational provision

be made for the self-supporting woman over forty? How can we perpetuate the best of that sentiment known as true chivalry, in order to preserve industrial competition between the sexes and society from brutalizing tendencies involved in over-pressure for industrial and commercial efficiency?

The preceding pages of this book have disclosed more unsolved problems than definite solutions for educational and industrial troubles. Given a knowledge of the nature, significance, and number of the questions—social, educational, and occupational, such as we have endeavored to present so far, and in their philosophical and historical perspective, the student, perhaps entering for the first time upon an attack upon actual, local difficulties in organizing and conducting vocational education, needs to learn about one other vastly important problem. This problem concerns the best general *mode of attack*, or of *study*, in order to save time, effort, and money in meeting the incessant demands for mutual adjustments between industry and education. A man armed with such a method and confronting difficult situations with an open, vigorous mind is more valuable to the schools and to industry in the long run than a man with a favorite remedy, a fad, or a dogmatic formula. The next chapter will present a vital, general procedure in attacking difficulties of adjustment between the school, industry, and society as a whole.

Problems

1. Explain the two-fold nature of the general problem of the education of woman.
2. Observing distinctions between the literatures of opinion and of experiment, we observe what conclusions regarding sex differences in capacity for work? [See Hollingworth.]

3. What do you think of Havelock Ellis' conclusions regarding "equality" of the sexes?
4. Using Baldwin's or Boaz' tables, study differences in curves of growth in weight and in height of boys and of girls.
5. Show that true intellectuality may embrace knowledge and skill in home-making.
6. Describe at least seven functions of the trained home-maker.
7. Why might some married women or widows with sufficient technical training in home economics, make ideal teachers of the subject?
8. Draw up an analysis of functions for practical participation by men in home-making.
9. Distinguish between vocational home-making courses and household arts courses. Is the distinction one of intrinsic difference, or of expediency?
10. Study in a small school system all teaching in home economics, beginning with the lowest grades. Observe any unnecessary duplications, omissions, additions. Study laboratories, class rooms, equipment, practice cottages or apartments; disposition of products; methods of instruction; salaries of teachers and supervisors; training of teachers both in theory and in practice; programs and courses of study; unit courses; part-time, evening, and all day schools; supervision of work; general and specific aims.
11. Ascertain from local Association of Commerce, or State Department of Labor, or from other sources, the numbers of women and girls employed in each of the great occupational groups in your town or county. Reduce to percentages and compare with Census figures for (a) State and (b) the United States.
12. From standpoints of value to community and to health and progress of individuals, what are the most promising occupations for women in your community and State?

13. How may we coördinate household arts education more effectively with actual home activities of pupils? Study a project system.
14. At what age of the pupil is it practicable to begin the systematic vocational home-making course?
15. Where girls must live in a dormitory, how can educational values be obtained best from practical work in housekeeping?
16. Enumerate the special problems of trade-extension evening courses for women in your city.
17. How can we interest girls from 14 to 21 years of age, who will be wage-earners in industries not relating to the home, in vocational home-making courses?
18. A young woman gifted with a ready memory during her college career drifted into household economics and graduated. She taught school a short time, and afterwards she took graduate courses in universities and finally won a doctorate, her thesis being largely a review and compilation of library and questionnaire materials, or of what others had written about household economics. Later, through the influence of friends, she was elected professor of household economics in a college or university. Never in her life had she fancied the making of a dress, the cooking of meals, the business management of a large home, or had much to do with children outside of her classroom. In her heart, she would have preferred happy marriage above all things, but for some reason men were not interested in her. Review the strength and the weakness of the woman's preparation, from the point of view of her students, the institution employing her, and the state. Portray the ideal teacher and leader in home economics.
19. A college student who had vacillated between household economics and literary courses, finally becoming a dabbler

in philosophy, and who dearly loved to be called a "radical," was asked if she was still studying home economics. She said emphatically,—"*No.*" When asked further what she was following, she replied seriously: "*Oh, just plain intellectuality!*" Discuss this type of attitude, and explain the probable causes thereof if you can. Or describe a case if you know of similar instances.

20. Show how home economics education, in the sense of preparation for the best kind of home-making, can be a powerful instrument in the perpetuation of American Democracy.

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CHAPTER XII

USES OF RESEARCH FOR EDUCATION AND INDUSTRY

Meanings and Values of Research: Scientific method better than debate; besetting errors; kinds of studies; making research practical.

Industrial Research: Technical studies; seeking efficiency; selecting promotional material; tenure and fear; trade tests; making trade tests; oral tests; picture tests; performance tests; classification of men; intelligence as a factor; occupational analyses; army specifications; English Ministry of Labour; U. S. Bureau of Labor Statistics; other industrial researches.

Educational Research: Kinds of studies; survey movement; bureaus of educational research; varieties of aims; establishing industrial schools.

The Vocational-Educational Survey: Elements of survey; steps in a complete vocational-educational survey—(1) preliminary study of community background, (2) study of existing industries and occupations, (3) study of existing schools, (4) summary and constructive plan; final activities; cautious inductions; the two-fold conclusion.

Summary. Problems. Selected References.

Meanings and Values of Research

Scientific method better than debate. Research is to be credited with achievements in the fields of chemistry, physics, medicine, and invention. Accumulative, coöperative efforts at research have resulted in the accelerated progress of science during the past fifty years. Only when wrong ideas and aims have prostituted science, when high technical skill is united to wrong ideals, does human welfare fail of betterment when research advances. Banishment of ignorance, superstition, disease, pain, and fear; control of fire, heat, and electricity—these conquests are the results of research. Endowments, foundations, universities, governments, and states in manifold ways

have supported and encouraged research. Its beginnings are more remote than Socrates and the end of its enlargement is not in sight. It is strange that in the field of pedagogy men have been slow to recognize the power of research. We have heard much of education as preparation for life, or as an aspect of life, nevertheless the schools actually have been remote from life, and pedagogues in many instances have meager vision and little contact with life beyond the sphere of strictly school or university activities. The greater world pulses with the impetus that has come from research affecting industry, hygiene, economics.

Agriculture, trades, industrial operations and processes, commerce, home management, and domestic science—undertakings of general import for wholesome living, present unnumbered and unanswered questions that can more profitably be attacked by the truth-seeking method of research than by debate, oratorical tournaments, or philosophical speculation. It is sometimes necessary in communities given wholly to these latter kinds of attack upon difficulties of education to insist upon a laborious application of systematic observation, experiment, fact-gathering, and cautious deduction, in order to proceed practically to the right steps in the introduction of industrial education. For the purposes of the present chapter it will suffice to indicate the essentials of the research method, typical results obtained, and some frequently encountered problems which men both in the schools and also in industry, who are interested in educational reorganization, might analyze by the principles of research. Finally, we shall append selected references bearing upon the subject.

Besetting errors. Beginners in educational research are prone to rely upon easy, statistical computations or upon the use of questionnaires, or upon compilations of the thoughts and writings of other workers. This kind of thing also appeals not infrequently to students who like sedentary work, attention to

clerical details, or burrowing in libraries for second-hand materials. Experienced investigators have learned that the procedure in studying an industry and its contained occupations for purposes of education is a distinct undertaking and requires prolonged, firsthand experience in the field. It demands contact with industry, establishments, plants, and workers. A standardized procedure has yet to be developed. It is questionable whether there will ever be a "standardized procedure." We need men and women trained in scientific methods and imbued with zeal for research combined with courage and sanity, who can formulate methods of study suited to the difficulty and situation.

With regard to scientific methods in general, as applicable in any field of research, the liability of an observer to certain errors and fallacies is well known. For example, here are nine: (1) Constant errors that come from prejudice, bias of the observer; (2) constant errors in instruments of precision; (3) variable errors in observer or instrument; (4) errors of judgment, and false perceptions or illusions; (5) general conclusions from few instances; (6) careless, vague, or ambiguous use of terms and concepts; (7) mechanical manipulation of or literal dependence upon statistical devices; (8) writing "facts" from memory; (9) clerical and arithmetical errors.

Training in scientific method, practice in the solution of difficult problems, adequate financial support, and the publication of reports with attention to criticism, and work based upon character,—these are antidotes to defective educational studies made in the name of research. An opportunity exists for universities to provide adequate training in the methods of educational and industrial research. Critics assert truly enough that some of the recent efforts at educational research are of doubtful scientific validity. Truly crude, also, were pioneer efforts in chemistry (the successor of alchemy) and in astronomy (the successor of astrology). Educational and industrial research,

however, has progressed beyond the primitive state. The failure of enthusiastic support by some schoolmen is not merely the result of certain weak attempts, but it may be due also to failure of critics themselves in defining and evaluating clearly the nature and aims of scientific research.

Kinds of studies. Research is in marked contrast with the merely formal study of organized knowledge. In general, research is penetration to the frontier of knowledge in one direction,—and going beyond. There are, however, many types or phases of scientific research, and contributions or reports upon researches may concern such efforts as these: (1) A new discovery or invention; (2) disclosure of errors in existing doctrines; (3) novel application of an established principle; (4) verification of an accepted belief; (5) description of a new case under an old rule; (6) a good hypothesis.

Making research practical. Naturally arises the question, "What is practical?" Caution is needed at this point, both by men in industry and by school men. They who from the beginning demanded the *practical*, harassed researchers in chemistry, physics, astronomy, or biology. Abundantly practical have been the ultimate results of a score of pioneer studies which were of only academic interest to our learned ancestors, and even unheard of by contemporary multitudes. What seems purely academic, theoretical, or even visionary to one generation or individual may be of demonstrable utility to another. To prove this, one needs only to trace the manufacture and present economic significance of drugs, pure food-stuffs, anesthetics, dyes, metals; or of dyamos, motors, telephones, and wireless, all electrical devices, the steam engine, specialized factory machines, and the aeroplane; or of modern navigation; or of medicine and surgery, as well as of scientific agriculture. Philosophers easily show the impossibility of limiting rigidly the concept, *practical*. The practical in education is as difficult to define as it is in chemistry or geology. We mean by it generally something that is of

immediate use in our mutual betterment. The idea of the practical can easily be degraded to that of expediency, or to subserviency to stronger power for selfish ends. Research about occupations and about certain school problems can be of great practical use to boards, superintendents, and the people in their effort to relate industry and education.

Industrial Research

Technical studies. Chemists and physicists as well as engineers have transformed the world through the application of scientific methods of attack in mastering Nature. Industrial processes, transportation systems for water, land, or air, soil fertilization, drugs and chemicals, labor saving machines, inventions,—the steam and the gasoline engines, the telephone, the wireless, the typewriter, the dictaphone, paper, and the modern printing press, are in most instances the fruitage of technical studies by many workers. The history of applied science is a lengthy one more significant than the description of wars. It is not, however, within the scope of these pages to develop the theme.

Seeking efficiency. The essential meaning of the word efficiency is the power to produce desired results, but to-day the term is used in different senses. The engineer measures the efficiency of an engine in transforming the potential energy of coal into kinetic energy. Factory employers strive for efficiency in employees,—but with various methods and aims. School superintendents are now scoring teachers by means of alleged efficiency-scales.

A labor leader said on one occasion within the hearing of the writer:

"There are too many 'Smart Alecks' calling themselves efficiency experts going about pretending to do wonders. They ascertain the maximum out-put of a worker, and they devise schemes to keep him under pressure to maintain this maximum chiefly for the benefit of the

employer. The health, development, and happiness of the employee is sacrificed to the ideal of 'efficiency' which means in the long run more work and more production from the employee and lower costs and more profits to the employer." The basis of truth in this heated statement exists in undue speeding-up, highly specialized piece-work, harsh cost-record systems, disregard of safety and comfort of workers—conditions not hard to find in individual establishments in practically every manufacturing state. The trend of legislation, factory inspection, and the humane spirit of coöperation which also exist in many other establishments is opposing this type of efficiency. Extortion of strength and life from factory workers, boys and girls, men and women, under the guise of "efficiency" is about on a par with the practice of a retailer described by Mr. Farnham(5). Says he: "A friend of mine once worked for a grocer who kept what he called a 'boob register.' The volume which had earned itself this dignified pseudonym hung by a string behind the counter and contained the names of those women who experience had taught the proprietor neither counted the eggs nor weighed the sugar. A special clerk known as 'the swindler'—as my friend declared by all that was holy—waited on these women and systematically short-weighted them, so that the thrifty proprietor in a measure recouped himself for the losses occasioned by such other customers as found it cheaper to flit than to pay rent."

Valid uses for the true efficiency-expert abound. Students in vocational schools should be made familiar with these uses. Enormous is the waste of both physical and human materials through the lack of efficiency in some industries. Here are typical problems for the man who seeks efficiency in an industry:

How may waste and by-products be salvaged?

How may materials be made quickly accessible and how may used stock be replaced?

How may profitless competition be eliminated?

How may time-killing activities be avoided?

Due authorization of purchases, quick delivery, economy in clerical help and in postage, avoidance of credit-risks—all these are topics for efficiency-study.

Cost-record keeping in order to predetermine costs, is a work demanding intelligence and skill.

Increasing the good-will, and lessening the turn-over of labor are related and complicated problems.

Selecting promotional-material. The channels through which money goes out of rather than into an establishment are these: for plant and materials, for advertising, and for salaries and wages of officials and employees. Plants are erected and materials are purchased upon the bases of minute specifications. The efficacy of advertising devices is often checked up carefully. But methods are relatively crude in the matter of selection of employees.

Employment managers supposedly skilled were asked to pass judgment upon the prospective values of thirty applicants for positions after personal contact with the applicants. Their judgments showed serious contradictions in ratings. Bosses who had known the same employees for years were asked to rate the employees. Here again was found the uncertainty of subjective tests in judging men. Scott tells of one firm engaging a thousand salesmen by the employment manager method. Of a thousand engaged but fifteen per cent remain with the firm as long as one year.

Difficulties in selecting promotional material are being attacked by the research method. Tests are being devised which candidates for a position may take, and the scores made upon these tests are checked with the subsequent careers of the employee in business. Thus through the efforts of Scott, Bingham, Whipple, Thorndike, and others to devise tests there is promise of a useful system to eliminate some of the loss and disappointment which comes from the employment of candidates without capacity, intelligence, or skills suited for designated positions. The perfection of such devices, however, is a matter of the future, as will be seen more clearly in Chapter XIII.

Tenure and fear. Selection of employees by means of "tests" has some unfavorable aspects. No formal psychological or trade test exists which measures loyalty, courage, patience, industry, personal appearance. It is a cold-blooded procedure to employ men and women mainly upon the basis of a statistician's score. There is a more favorable side to the question, however. Tenure of position to-day, whether in shop, office, school, or public position largely demands a measure of *fear*. The slave-driver, the feudal lord, and the despot have lost legal or polite standing—but camouflaged they exist and flourish here and there in shop, in office, in school, and in public life. Can the use of the scientific test be made a step toward security of tenure to those who can demonstrate ability? Will it afford assurance of promotion to the young man or woman who acquires training and exhibits intelligence and skill? Will it expose the incompetent, the parasite, and the sycophant who block the path of the meritorious sometimes in unfair competition?

Trade tests. During the recent organization of the American Army it was found necessary to devise quick methods of ascertaining whether men who claimed to be proficient in trades were really experts, journeymen, apprentices, or tyros in the skills claimed. It was found in the record of 250,000 soldiers trade-tested, that of those professing ability in certain trades, 30 per cent were *inexperienced*, 40 per cent were of *apprentice* grade, 24 per cent were *journeymen*, and 6 per cent were *expert*.

Making trade tests. The construction of a test of mechanical skill and knowledge is a new kind of research. Tests of course will vary with the industry and occupation. The Committee on Classification of Personnel in the Army followed eight steps in the making of a trade test:(19)

1. Information in detail about the trade is gathered from labor unions, employers, trade schools, trade literature.

2. A list of tentative questions, or a tentative job, embodying essential features of the trade is prepared.

3. This list of tentative questions, or the job, is tried out on a few tradesmen of different trade abilities.

4. The list, job (or test), is then revised.

5. The test, as now revised, is tried out on 20 men known to be *experts*, 20 men known to be *journeymen*, 20 *apprentices*, and 20 *novices* (intelligent adults not trained to the trade). To avoid localisms tests are tried out in different cities, Cleveland, Newark, Pittsburgh, New York.

6. Analyses are made of the answers to the questions, or of the jobs, made by the 80 men, in order to determine:

In which questions, or features of the job, *experts* do better than *journeymen*, *journeymen* better than *apprentices*, *apprentices* better than *novices*.

7. The completed trade test is prepared in duplicate sets, and these are sent to various stations in camps, etc.

8. Pending future improvement of the test, information is gathered from the camps and compiled.

It is claimed that Army trade tests can be given by any intelligent man properly instructed; they require no elaborate equipment, can be given anywhere and in a short time. Examples of kinds of trade tests available for trade schools and for industry are such as these, A, B, C:(13)

(A) *Oral tests.* Machinist and mechanic—general; machinist-tool maker; ship carpenter; electrician-interior wireman, auto mechanic—magneto and ignition; welder, cutter—oxy-acetylene operator; leather worker—shoe repairer, cobbler; boiler maker; telephone man—telephone repairer, switchboard; surveyor—general; etc.

(B) *Picture tests.* Blacksmith—horseshoer; electrician—lead storage battery; leather worker—harness maker; telegraphy and wireless operator; machinist—lathe operator; instrument maker and repairer of typewriters; etc.

(C) *Performance tests.* Structural steel worker—erector; chauffeur—truck driver; stenographer and typist; lineman—

telephone and telegraph; pipe fitter—steam; carpenter—pattern maker, wood; electrician—interior wireman; etc.

Classification of men. It is evident that industry can profit by wider adoption of the trade tests. In the Army, however, sole reliance was not placed upon the trade tests. For each soldier there was kept a qualification card upon which were recorded these data:

Occupation	Schooling
Trade skill	Linguistic ability
Previous experience	Mental ability
Former employer	Physical ability
Nativity	Leadership ability
Citizenship	Kind of service preferred

Intelligence as a factor. A million and a half of men of the American Army have taken group "intelligence tests," with some remarkably useful results in the practical and quick classification of men. There are qualifications in a soldier and in a worker in industry not measured by a test of general intelligence. Commanders who rated officers for promotion were explicitly cautioned that the Army Intelligence Tests (Alpha, Beta, etc.) do not measure personal appearance, energy, leadership, tact, initiative, etc. Officers were promoted upon the basis of (1) physical qualities, (2) intelligence, (3) leadership, (4) personal qualities, (5) general value to the service. It is believed, however, that general intelligence is commonly found in connection with other desirable qualities in men. In another chapter we shall endeavor to set forth the important facts about quantitative "tests of intelligence" and to discuss the nature of general intelligence. (See Chapter XIII.)

Occupational analyses. To study the worker, the man or woman, is important for true efficiency in modern industry. It is also essential to study each job or position. In vocational-educational surveys attention repeatedly has been drawn to the

value of minute, first-hand studies of different occupations, with a view to their appraisal from the social point of view and to the better mutual adjustment of industry and schools. Typical studies of this kind are found in the reports of these surveys: Richmond, Va.,(18) Indiana,(31) New Orleans, La.,(6b) Cleveland, Ohio,(4) Minneapolis, Minn.(11) Special values during the readjustments caused by the World War have appeared in occupational descriptions. We find elaborate analyses, therefore, being printed by the Army,(29) by the British Ministry of Labour,(3) and by the United States Bureau of Labor Statistics.(30)

Army specifications. In Chapter VIII special attention was called to the "Occupational Index" of the United States Army. The Army classification system includes 714 defined occupations. Each occupation is denoted by a symbol, which promotes accuracy and uniformity upon the part of interviewers and classifiers and saves money in telegraphic orders. For each trade there is a brief description.

English Ministry of Labour. An elaborate series of reports concerning industrial and trade processes has been issued by the British Ministry of Labour. The information is intended for the use of pension committees, employment exchanges, technical schools and institutes, and military hospitals, and also for the use of employers and workpeople and any who are interested in the problem of the disabled soldier and sailor. Special attention in these reports is devoted to the problems of training for occupation. The wide range of these valuable reports is indicated by the titles of some of those issued during the years 1917 and 1918:

No. 1. Attendants at Electricity Sub-Stations.
No. 2. Employment in Picture Theatres.
No. 3. Tailoring.
No. 4. Agricultural Motor Tractor Work in England and Wales.
No. 5. The Furniture Trade.

No. 6. Leather Goods Trade.
No. 7. Hand-Sewn Boot and Shoe Making and Boot and Shoe Repairing.
No. 8. Gold, Silver, Jewelry, and Watch and Clock Jobbing.
No. 9. Dental Mechanics.
No. 10. Aircraft Manufacture, Fuselage Making and Erection of Engine on Fusilage.
No. 11. Wholesale Tailoring.
No. 12. Boot and Shoe Manufacture.
No. 13. The Basket Making Trade.
No. 14. The Building Trade.
No. 15. Engineering.

U. S. Bureau of Labor Statistics. In a preceding chapter (pp. 310) we have indicated how the work of writing descriptions and specifications for different commercial positions has been undertaken by the United States Bureau of Labor Statistics. The Bureau has widely extended the work of occupational analysis, including in its scope descriptions of occupations in mines and mining, in metal working, building and general construction, railroad transportation, shipbuilding, slaughtering and meat packing, cane-sugar refining, flour milling, medical manufacturing, textiles and clothing, etc.

A few paragraphs (from the report on logging camps and sawmills) will further illustrate the results of this type of industrial research.

DECK MAN

Description: The deck man works on the log deck where the logs are first brought into the mill by the bull chain. He examines the log, cuts out rocks, and guides it to its first position upon the incline to the saw carriage. He may also be required to scale or compute the board footage of the logs.

Qualifications: The deck man must possess exceptional agility and strength. No experience is required except that of handling logs quickly and precisely.

Schooling: Common school; preferably high school.

DOGGER

Description: The dogger adjusts the log into position and clamps down the dogs that hold it on the head saw carriage preparatory to sawing. He works under the immediate direction of the head sawyer.

Qualifications: The dogger must be adept in the use of a peavey or cant hook. This work requires strength, dexterity, and attentiveness to the signals of the sawyer.

Schooling: Common school; preferably high school.

SCALER, SAWMILL

Description: The scaler is employed on the log deck to compute from the dimensions of the log the probable board footage that it will make when sawed. He usually employs a slide rule especially adapted to this purpose. He may be obliged to keep his own records, or may have an assistant or tallyman to take down the estimates.

Qualifications: When accuracy is required, this work demands good judgment, a knowledge of timber, and careful measurements.

Schooling: Common school.

SETTER (ON SAW CARRIAGE)

Description: The setter operates the setting mechanism of the head saw carriage, moving the saw sideways into such position as designated by the head sawyer. This adjustment regulates the thickness of the piece to be sawed. Some types of setting mechanisms are operated by steam power and others by hand. The position is usually a prerequisite to that of sawyer.

Qualifications: The setter usually must have served as dogger before becoming a setter. He must have some knowledge of mechanical appliances such as he is called upon to operate.

Schooling: Common school.

SURVEYOR, GENERAL

Kindred Occupations: Civil engineer; Instrument man.

Description: The general surveyor makes surveys in connection with water systems, pipe lines, and surveying work of a general nature.

Qualifications: The general surveyor must be capable of making preliminary and location surveys, compass surveys, topographical sketches, leveling for grades and flows, profile and cross-section surveys, and lay-

ing out reservoirs; must be capable of making complete and intelligent field notes and plotting them in regular form. He must be thoroughly familiar with various types of transits, levels, and compasses and capable of making all necessary adjustments. He must be a rapid and accurate computor on civil-engineering work, and familiar with the use of mathematical tables and engineering data. He should have had general surveying experience in municipal contracting or engineering work.

Schooling: Technical-school graduate.

SWAMPER, BUCK

Description: The buck swamper is the foreman of a stumping or swamping crew.

Qualifications: The buck swamper must be able to direct the use of explosives and to supervise workmen.

Other industrial researches. Our discussion of industrial research have not included sufficient enumeration of suitable problems for study, such as these: Labor legislation, prevention of industrial accidents and diseases, workmen's compensation, business organization, scientific management, wage-scales, economic and social questions. A useful topical outline and bibliography is available for the student who desires to make such studies.(12)

Educational Research

Kinds of studies. We have mentioned some industrial and occupational problems which are being attacked systematically by the method of research. If industry and the schools are to be brought into closer articulation or coördination, a first step, as well as a continuously needed accompaniment, in educational progress, is the application of the sound principles of scientific fact-gathering, analysis, and inference to problems in the schools.

There is a fallacy in the assumption that to offer the children of a people free elementary education and some knowledge of vocational opportunity is entirely sufficient for accurate and

healthful adjustment of the masses to occupation, or for the right interrelation between activities of the school and of industry. We have proceeded a little further than faith in this assumption, which, it is true, is a belief far in advance of easy credulity in magic or fate. To bare elementary training and its recent elaborations we have added specific, vocational training, for acquisition of knowledge and of skill, a training suitable for both prospective workers and present workers in industry, and one to be outlined after scientific study of the specific processes and conditions encountered during these present times of new and changing industrial conditions.

Contrary to inertia and to those tendencies retarding educational research, happily there are also contemporary movements which mark its rapid advance. It is becoming recognized that as industry has improved its processes, products, and efficiency, through adoption of research as a guide, so also organized education can profit hugely by reliance upon the method of research in the solution of its administrative problems, as well as in academic questions. Examples are multiplying of applications of the scientific method to the solution of questions about statistics, child-accounting, exceptional children, measurements of school achievement, mental tests, discovery of markedly exceptional children—whether backward or gifted, methods of instruction, economical methods of learning, finance, sanitation, and construction of school buildings.(6) The National Society for the Study of Education has effectively encouraged the use of standards and tests for the measurement of the efficiency of schools and school systems.(24)

Survey movement. Industrial and educational commissions have made serious studies for education. More than a hundred cities, in greater or less degree, have been subjected to a scientific procedure in the study of educational problems, e. g., Richmond, Springfield (Ill.), Portland, Salt Lake City, Butte, Columbia (S. C.), Indianapolis, New York, San Francisco, New Orleans,

Cleveland, and Minneapolis. Numerous states also have undergone a similar process, e. g., Ohio, Colorado, Iowa, Arizona, South Dakota, Wisconsin, Delaware, Wyoming. In a dozen cities there are now permanent provisions for educational research. The Federal Government has made provisions for research in many departments and bureaus. The Government provides a special fund for the purposes of educational and industrial research under the auspices of the Federal Board for Vocational Education.

Bureaus of educational research. The existence of a National Society of Directors of Educational Research is evidence of the establishment of numerous bureaus under state, municipal, or private auspices. Bureaus of educational research of one kind or another have been started at the following state universities: Arkansas, Illinois, Indiana, Iowa, Kansas, Minnesota, Nebraska, Oklahoma, South Dakota, Washington. A partial list of city bureaus of educational research with the dates of establishment comprises: New Orleans (1912), Boston (1914), Buffalo (1916), Chicago (1917), Cleveland (1916), Detroit (1914) Kansas City (1914), Louisville (1914), New York (1913), Oakland (1914), Omaha (1917), Rochester (1912), St. Paul (1917), Topeka (1916).(9) The Russell Sage Foundation, the Carnegie Foundation for the Advancement of Teaching, and the General Education Board have made extensive contributions in the field of educational research.

Varieties of aims. Some of the bureaus do clerical work largely and compilation of statistics. One bureau, now practically extinct, completed these important kinds of studies for the public schools: (1) Industrial survey; (2) measures on large scale of achievements of children in arithmetic, spelling, reading; (3) individual studies of exceptional children through coördinated efforts of psychologist, doctors, teachers, and social investigator; (4) sociological studies of eliminated pupils; (5) studies of delinquent boys from juvenile court; (6) statistical studies.

Important is the work of establishing standards of achievement in arithmetic, spelling, reading, geography, grammar, etc. Some economy of time and of effort in elementary education is being obtained as a result of such work. However, there may be over-emphasis upon research in "school subjects" to the exclusion of other issues. Scales and tests prepared by such men as Ayres, Courtis, Thorndike, Starch, and by others are nearly indispensable in good school supervision when used within reason. As valuable as may be discriminating measurements of school achievement in arithmetic, reading, spelling, etc., the truth is, that the relative importance of the results accruing from the use of any known devices for such measurements may be easily exaggerated. Teachers by misuse or over-emphasis of statistics can be diverted unfortunately from a wholesome attitude toward their work. Tests on school subjects appeal to progressive superintendents, and also appeal to a certain type of politically minded, timorous official who does not wish eagerly for a rigorous examination of serious matters of administrative organization, control, finance, costs, or adjustment of schools to industrial and social needs. Studies of arithmetic, reading, and spelling sometimes interest both teachers and the public, but such tests should not be permitted to divert attention from more vital issues, for instance, the matter of equitable salaries for teachers, conservation of health, and the effective coördination of industry and education.

Establishing industrial schools. There are educational researches representing the other extreme. In avowed effort to avoid "any attempt to investigate and report on the educational systems now in existence" and to avoid "suggestions for the modification of such systems, except as to the addition of trade instruction for men and women who are going to earn a living by a trade," H. L. Smith has written a book entitled "Establishing Industrial Schools." It is intended to suggest to states, cities, or to any community some concrete methods of determining "what

sort of industrial and trade schools it needs, what should be taught in them, and how to select and prepare the instructors who are to do the teaching." The general outline of the study suggested itself to the author some years ago while working in the trade schools of Germany. Survey material, minute directions for field workers in manufacturing and in commerce, things to inquire about, suggestions for conferences and reports, descriptions of cards, circulars, questionnaires, etc., are set forth in organized, useful fashion in this little book. Much of the material and of the procedures indicated therein were drawn from the Minneapolis Vocational Survey, an undertaking intended to culminate in action and establishment rather than merely in a written report. Smith's study is, for the specific purposes intended, a valuable manual, and useful to the school man for the first time seeking to establish industrial schools.

It is a fundamental error, however, not to be tolerated in democracy, to assume that we can safely add trade, industrial, commercial, or agricultural vocational education—superimpose it upon, or articulate it with, *public education*, without giving careful study and consideration to the nature and needs of existing public and private schools and of the local community as a part of society. Smith, of course, recognizes this principle and directs attention (p. 66) to the necessity of giving consideration to "the curriculum of the ordinary public schools . . . existing part-time and evening schools, private schools, Y. M. C. A. classes, commercial schools, classes conducted in industrial plants, and correspondence instruction."(22)

It is not utopian to demand in every instance where types of schools are to be established—whether general, cultural, or vocational in aim, to be paid for by the public, that preliminary to such establishment a thoroughgoing study of community needs, existing schools, and existing industries should be made concurrently. Let us now consider the characteristics of such vocational-educational survey in broad outline.

The Vocational-Educational Survey

Elements of survey. C. A. Prosser stresses the value of survey work designed to culminate in an actual *program* for vocational education, rather than in a mere *portrait* of existing conditions.(16) Whether the survey be a continuous affair or an occasional or one-time effort, in our own opinion there are four general groups of elements for study, to be borne in mind if a complete view of the problems of coördinating occupation and the school is to be attained. These indispensable elements concern respectively: (1) The community background; (2) characteristics of local industries and occupations; (3) characteristics of existing schools; (4) a summary of relevant facts regarding community, industries, and the school, with a resulting constructive program for the mutual improvement both of the schools and of industries. The four groups of elements may be indicated by means of the following outline:

Steps in a Complete Vocational-Educational Survey

I. *Preliminary and Study of the Community Background*
   (a) Securing authorization and support.
   (b) Formulation and announcement of aims.
   (c) Accurate sketch of local geographical, climatic, historical, social, and economic characteristics.

II. *Study of Existing Industries and Occupations*
   (a) Actuarial accounting in order to ascertain proportions of workers engaged in each occupation during periods of years.

Enthusiasm to provide in the schools new shops, elaborate equipment, industrial courses, and instructors for a specified vocational training may ignore the percentage distributions of occupations as estimated for the local community or for the country at large. A simple statistical accounting of community occupations as a preliminary step in the consideration of pros-

pective courses would prevent much waste in erection of courses not needed and promote courses greatly needed.

During the Cleveland Survey an actuarial study as a basis for industrial education brought out these facts:

In Cleveland about 3,700 boys leave school each year and go to work. They represent various stages of advancement from the fourth grade of the elementary school to the fourth grade of the high school. They are scattered through more than 100 school buildings. The problem of industrial education is to prepare these boys with their differing ages, their widely varied school preparation, and their scattered geographical distribution to take their places in the work-a-day world. They represent every grade of intelligence and every stratum of social and economic life. They are scattered in little groups through more than 1,000 classrooms.

Now almost all these boys are of American birth, and it is certain that in a few years they will be engaged in doing just about the same sorts of work as are now done in Cleveland by adults of American birth. Census data show us that among every 100 American-born men in Cleveland there are eight who are clerks, seven who are machinists, four who are salesmen, three who are carpenters, and so on through the list of hundreds of occupations. Even these simple facts at once call into question all the standard assumptions about the extension of industrial education depending on increasing the number of carpenter shops and machine shops in the public schools. Among each 100 American men only seven are machinists and three are carpenters. Clearly then we should not be justified in training all the boys in our public schools to enter the machine trade or the carpenter trade when nine out of each ten will in all probability engage in entirely different sorts of future work.

Again a study of other similar figures shows that the 10 leading occupations include only 41 out of each 100 American-born men. Moreover, more than half of these 41 are engaged in mental work rather than in manual work. The more such figures are studied, the clearer it appears that our conventional ideas about industrial education need critical scrutiny and careful challenge. A beginning in both directions has been made in the Cleveland Survey. The results are

presented in a summary report entitled "Wage Earning and Education."(4)

(b) Statistical investigation of establishments and trades in order to ascertain the relative importance of industries and trades locally and as contrasted with the whole country.

(c) First-hand studies of typical local establishments or trades in leading industries. Study in ludes products, values added by manufacture, age, sex, and number of employees, hours of labor, sanitary conditions, seasonal nature of employment, and a scrutiny of blind-alley jobs.

(d) An analysis of the departmental and of personnel organization for typical large establishments. These analyses are usually charted to show the lines of authority and also the lines of action or function among the different departments and employees.

(e) Intensive analysis should be made of each typical, *important occupation* of the community. The occupation may be found identical or varied in different establishments. The procedure of the Richmond Survey with necessary modifications will be found a useful guide in studying an occupation at first hand. The Richmond Survey was conducted jointly by the U. S. Bureau of Education, the U. S. Bureau of Labor Statistics, the Russell Sage Foundation, the National Society for the Promotion of Industrial Education, and the local and the State Boards. The points of inquiry were set forth under nineteen topics and questions, as follow:

1. A description of the process, operation, movements, etc., in the specific trade or occupation under observation.
2. Products or specialties.
3. Importance of trade.
4. Conditions of employment, (*a*) involving physical or nervous strain, (*b*) stimulating intelligence and interest, (*c*) narrowing and re-

stricting mental development, (*d*) affecting welfare of workers, as liability to accident, or disease.

5. Wages: Piece rate, daily average, apprentice, journeymen, etc.
6. Hours of labor: Regular, per day, per week; on Saturday.
7. Seasonal activities: Busy season, slack season, fluctuations.
8. Extent to which workers are organized.
9. Entrance age.
10. Time required to learn operations.
11. Age of maximum productivity.
12. Is supply of labor adequate, and cause of any deficiency?
13. Demand for this labor decreasing, or increasing?
14. What is the source of supply?
15. What does a worker need to equip him properly for this trade? (*a*) General education, (*b*) trade and technical education, (*c*) manipulative skill, (*d*) other requirements, as accuracy, etc.
16. What does the industry give the worker? (*a*) Provision for systematic instruction of apprentices? (*b*) Any trade and technical knowledge imparted? (*c*) Manipulative skill? (*d*) Extent to which operations can be learned in the factory? (*e*) Line of promotion?
17. Common deficiencies of workers?
18. What ought school to give prospective worker before he enters the shop?
19. Suggestions from the trade as concerns part-time and evening courses?

(1) What can school give after worker enters shops?
  (*a*) Of trade and technical knowledge.
  (*b*) Manipulative skill.
(2) Nature of continuation courses needed?
(3) Nature of evening-school course needed?(18)

If one contrasts the procedures followed in Richmond, in Cleveland, in Minneapolis, and in New Orleans, for industrial surveys, there will be found points of marked difference in procedure from the above analytic process. How far this process is superior to naïve assumptions regarding the general nature of mechanical occupations, and the needs, is apparent,

The above outline exhibits a score of problems inherent in almost every occupation to be studied for education.

(f) Attitude of organized labor. Coöperation of organized labor can usually be obtained for upright movements in public education, through conferences with officials and attendance upon union meetings. A fair and open policy is necessary in obtaining this coöperation and interest.

(g) Attitude of employers. The same fair policy should be practiced with employers and their organizations. Whether in dealing with employees or employers it is foolish to depend upon the obsolete method of surveying by means of questionnaires sent by mail or other long-distance methods.

(h) Uses of spare time of workers. Emphasis upon the necessity of the eight-hour maximum daily working period as essential to the welfare of the individual and of society, has not been followed by sufficient realization of the social significance of the uses of spare time. A complete study, therefore, intended eventually to benefit both pupils and industrial workers must include conscientious fact-gathering as concerns this problem. A community needs to know about the nature and values of:

(1) Existing public provisions for recreation.

(2) Existing philanthropic provisions for recreation.

(3) Existing commercialized recreations.

(4) Routine of twenty-four hours in the life of workers in given occupations.

III. *Study of Existing Schools, Public and Private*

Excellent printed studies of schools and of school systems abound. The Summary Volume, for example, of the Cleveland Survey, indicates in attractive form, the scope of the modern "educational survey." We are advocating in the present outline the joint study both of industries, of occupations, and of the schools, with a view to better mutual adjustment to the needs of society. With reference to the educational phases of such a joint study, or vocational-educational survey, it is nec-

essary here merely to tabulate the important points for fact-gathering and analysis. The analyses, of course, should include valid comparisons with results obtained from other communities under similar conditions of investigation. Here are the important points:

(a) Number of schools.
(b) Organization of the system.
(c) Control.
(d) Description of sites.
(e) Plants and equipment.
(f) Finance,—income and expenditures.
(g) Purchasing system.
(h) Building inspection.
(i) Supervision of instruction, corps, and methods.
(j) Selection, tenure, and salaries of teachers.
(k) Programs and courses of study.
(l) Text-books, nature, selection, values.
(m) Enrollment, register, average attendance.
(n) Elimination,—amount, cards, remedies.
(o) Age-grade-progress analyses.
(p) Standard measures of achievement in spelling, reading, writing, arithmetic.
(q) Status of physical education.
(r) Existing medical inspection, provisions for nurses, clinics, lunches, playgrounds.
(s) Exceptional children,—provisions for discovery, diagnosis, educational treatment.
(t) Vocational schools and classes in actual operation.

IV. *Summary of the Preceding Studies of (I) Community, (II) Industries and Occupations, (III) Existing Schools, and a Constructive Plan for Development.*

Final activities. If educational research is to be made quickly practical there must be more than the mere getting of facts. It is not enough to produce a true picture of existing

conditions, to be filed away. There are at least four classes of related activities, or steps, needful to make educational research practical. They are:

1. The accurate *getting* of the desired facts by researchers.

2. The careful *consideration* of the facts by boards, by superintendents, and by the public.

3. The prompt *publication* of the facts upon mutual agreement of researcher, boards, and superintendents for the benefit of the whole people.

4. Appropriate *action* where consideration of facts reveals the necessity for remedial action.

Cautious inductions. Even in a small city if the essential steps of the fourfold procedure are followed, school men and citizens should be helped thereby in the improvement of schools as well as of the occupations of the community. The outcome should be a definite plan of action, conservative yet certain in its ultimate result of maximum use of the schools for the good of society as a whole. Such a plan should *follow* not *precede* the making of an all-embracing vocational-educational survey. In too many instances in the past it has been the case that when new schools were thought to be needed—*first*, ground was bought, a building erected, teachers and employees hired, and—*lastly*, the courses of study needed were considered. Thus the demands both of individual pupils and of the community as a whole, have been considered last, rather than first. The procedure must be reversed.

The two-fold conclusion. The final conclusions of the vocational survey will contain more than mere facts for agitation. Definite proposals should be formulated as a result of the vocational-educational survey, in a constructive spirit looking toward effective changes in two directions in order to adjust education to the needs of life, viz.:

(1) *The Schools.* With regard to necessary modifications of or additions to existing schools.

(2) *Industries.* With regard to necessary modifications of existing practices and laws as affecting local industries.

It is not to be overlooked that while the special, legitimate interests of groups are to be equitably conserved, e. g., of teachers, of employers, and of employees,—nevertheless the implications of universal education point directly to the welfare of society as our chief end. The schools do not exist merely in behalf of the teacher-group; they must not be allowed to serve solely for the special advantage of a special group, as employers and corporations, or employees and unions. Efficiency and material benefit will accrue to all concerned from wise and impartial use of a ballast of facts in navigating many an educational shoal.

One might tabulate an inventory of numerous specific problems for educational research that urgently invoke serious coöperation of good citizens, whether they be school men, onlookers, or men in industry. In the meantime, sound judgment prescribes a firm foundation of facts of many kinds in the execution of plans for relating rightly the schools to industry, and industry to the schools. Preconceived ideas in places high or low, partisan debate and controversy, instead of fair trial, and methods of experimentation or observation under controlled conditions, ultimately may give large place to the preliminary application of scientific methods to the study of the educational and industrial problems. This application is desirable if we are to effect the right interrelation between education and industry—an issue fraught with some peril.

Summary

Without attempting to review the vast fields to which we have referred in this chapter, we may emphasize four aspects of the general problem of utilizing the research method in the effort to secure wholesome, mutual adjustment of education and industry.

1. Research is a fundamental step preliminary to human progress, as proved in the fields of chemistry, physics, medicine, and invention. Its methods—painstaking collection of relevant data, systematic observation and experiment, and cautious deduction of principles from facts—are applicable to the problems both of industry and of the schools.
2. Industrial researches, in addition to technical studies about materials and machines, are being made with success, as concerns efficiency of operations, selection of promotional material among candidates and employees, occupational descriptions and analyses.
3. Educational researches in school administration vary in aim but mainly have been concerned about curricula, courses of study, methods of teaching, measurements of achievement in spelling, arithmetic, reading, grammar, etc., with some attention to building standards, hygiene, and finance.
4. The movement for better articulation of the school with life has given impetus to the industrial survey preliminary to the establishment, or addition to existing schools, of vocational education. Sound principles of research demand that a complete vocational-educational survey shall combine these four elements: (1) Adequate studies of community background; (2) studies of existing industries and analyses of the important occupations therein contained; (3) study of the existing schools, public and private, with reference to administration, organization, number, staff, hygiene programs, curricula, methods, finance, and general operation; (4) constructive plan of action based upon the preceding three studies and pointing to definite modifications both of schools and of industrial establishments.

One hears often these days of the new applications of scientific psychology to the problems of the schools and of in-

dustry. It remains for us to say a word of caution and of information regarding practical applications of psychology.

Problems

1. Look over the preceding eleven chapters of this book and then formulate a statement of twenty different and unsolved problems in vocational education which profitably might be attacked by the method of scientific research.
2. Point out the differences between the philosophical and the scientific modes of approach upon a problem.
3. Show that attempts at research without suitable plan or preparation upon the part of the investigator may result in a mere trial-and-error procedure, imitative effort, or a repetition of what is already known.
4. Read Durand(1) and Thomson(28) and afterwards write a brief résumé of most important facts and conclusions therein.
5. What are the various meanings of the word *practical?*
6. Describe the essential features and the valid uses of a trade test.
7. Restate the steps or stages in the making of a trade test.
8. As a study of some magnitude single out a well-defined trade in your community (e. g., monotyper, linotyper, cabinet maker, stationary engineer, hand cigar-maker, tailor,) and without reference to existing tests, make a valid performance test, following the procedure indicated above. (Problem 7.)
9. Examine carefully the following reports of *surveys* and classify them as predominantly (a) educational or school, or (b) vocational or industrial, or (c) vocational educational combined: San Francisco, Cleveland, Indianapolis, Butte, Salt Lake City, Richmond (Va.), Newark, St. Louis, Detroit, Minneapolis, Springfield (Ill.).
10. Single out a dozen local occupations, study them carefully

at first-hand, write specifications for each occupation or job. Afterwards compare your own specifications of the local occupations with specifications of the War Department and Bureau of Labor Statistics.

11. In a small city under 25,000 inhabitants, and first obtaining skilled assistance and also the coöperation and backing of local Board of Education, Association of Commerce, and Labor Unions—make a vocational-educational survey with a view to mutual adjustments of schools and of industry. This, of course, is not an undertaking for amateurs.
12. Before reading the next chapter, recall your own views regarding the nature and applications of modern psychology.

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CHAPTER XIII

APPLICATIONS OF PSYCHOLOGY TO INSTRUCTION AND INDUSTRY

Psychology Explained: Unwarranted expectations; extreme attitudes; what psychology is not; progress of psychology; scope and status.

Measuring Abilities: Analysis of general intelligence; intelligence as voluntary adaptability; testing intelligence; standards of intelligence, in army, in university; interpreting tests; not sufficient for guidance; measurement vs. guess; judging others—students, employees; Hollingworth's experiments; army ratings.

Other Psychological Applications: Mental hygiene; detecting new capacities; fatigue; dependence upon special practice; economy in learning—modes, habit; instructional methods; principles of method; concrete types of teaching.

The Meaning of Life Work: Three terms distinguished; guidance difficult; ideal conceptions; maintaining ideals.

Summary. Problems. Selected References.

Psychology Explained

Unwarranted expectations. Years ago Professor James called attention to an unnecessary feeling of strain upon the part of some conscientious teachers, lest they do not learn enough of psychology to be efficient as instructors. It is not true that all of the psychology a teacher needs can be written on the palm of one's hand, but it is true that unwarranted, disappointing expectations have arisen regarding the immediately practical benefits to accrue in education from the psychology of introspection, reaction time experiments, tests with nonsense syllables, and other laboratory devices. In active life outside of the school we hear often of the applications of psychology to problems of business and industry. The student of the vocational movement in education may pause therefore long enough

to gain an appreciation of what is worth while in the attempt to apply psychology to education and to industrial problems.

Extreme attitudes. Two extremes of position may be found with reference to the utility of modern psychology in solving problems of education and of business or industry. The one extreme is that of credulity or naïve faith in almost anything that purports to be psychology. The other is an attitude of utter dislike of anything called psychological. A writer in a journal of business said the mention of applied psychology "gave him disgust," and Paul Shorey, a university professor of the extreme classical school, writes about as strongly against educational psychology. The moderately interested reader is puzzled by these extreme opinions and by the fact that psychologists among themselves apparently have differed in views. With respect to this divergence among psychologists, it may be said that points of difference naturally have been discussed and magnified more than those conclusions upon which all are practically agreed. The steady growing applications of scientific psychology in schools, in the Army, in industry and business render imperative a sane appraisal of the nature values and limitations of this branch of pure science used so much by researchers.

What psychology is not. The uninitiated are likely to confuse psychology with legends or with pseudo-scientific talk about such things as these: Mind-reading, telepathy, search for spirits and spooks, phrenology, palmistry, "character reading" by physiognomy, animal magnetism, somnambulism, "new thought," necromancy, and additional subjects that appeal to the morbid. The word psychology has become indelibly associated unfortunately with such things in the minds of many intelligent persons.

Psychology is only concerned with these matters so far as the demonstrable facts about illusions, hallucinations, delusions, and suggestion, uncover fraud and error in order to get at the

truth. A scientific study is an organized body of knowledge based chiefly upon careful observation and recorded experiment. Scientific psychology is simply the scientific attempt to study mental life wherever found.

Progress of psychology. Scientific psychology has made re-relatively slow progress because all mankind necessarily possesses a working knowledge of facts about mental processes (anger, fear, memory, imagination, dreams, etc.) and has been satisfied with crude psychology. Opposition to psychology has arisen owing to the conflict of some psychological findings with intrenched interests in medicine, in education, and in ecclesiasticism. Furthermore, the subject matter of psychology, mental life, is infinitely varied, complex, and difficult. Socrates and Aristotle long ago pointed the way to the study of mind—but scientific psychology has uniformly made relatively slow progress, even during the days of modern experimenters.

Scope and status. As in medicine, so in psychology many pages would be required merely to catalog a classification of the types of studies now being made in psychology. The scope of pure and of applied psychology is very wide. Pure psychology has been approached from various points of view, e. g., the philosophical, the physiological, the genetic, the laboratory. Its materials for observation include animals and human beings, the young and the old, both sexes, the normal and the abnormal. Applied psychology is used in medicine, in the training of teachers, in business—as in the study of advertising, testing candidates for designated positions, discovery of promotional material. At best, however, applied psychology is only in its beginnings. The American Psychological Association and the National Council of Research have maintained a high standard of scientific rectitude for its psychological workers. Nevertheless, outside of the fold, fakers and pretenders in applied psychology abound, often making unwarranted and silly claims for its values which may appeal to the credulous or unwary.

Measuring Abilities

Analysis of general intelligence. The expression *intelligence* is inextricably associated with different meanings. For example, philosophers debate about the intelligences—animal, human, and divine, and intelligence as related to the "dichotomies and trichotomies of the soul." In everyday speech the word *intelligence* may vaguely denote discernment, or understanding, or power of cognition, or acquired knowledge, or common sense, etc. The practical use of mental tests has rendered imperative a statement of the essential properties of the thing to be measured; hence have come numerous attempts to define *general intelligence*, a phase of life very desirable to measure. It will be useful to review briefly some of these attempts before stating a working definition.

James, in distinction from Darwin, held that man has the largest number of instincts (inherited racial habits) of any animal. Darwin, however, admitted that a high degree of intelligence is compatible with complex instincts—as in the case of the beaver, the sterile worker-ants, and bees. The problem of the nature of intelligence has been probed deeply not only with reference to human beings but also with reference to animals, as witness the researches of Claparede, Morgan, Forel, Jennings, Dawson, Porter, Davis, Watson, and Yerkes.

Hart and Spearman regard general intelligence as a central tendency or common factor of the mind, present in practically all mental activities. Laboratory psychologists have been prone to single out aspects of memory, attention, imagination, perception, discrimination, etc., as functions of consciousness and by testing these separately have sought a fair sampling of the mind. The trouble about this method much used by psychiatrists who study and treat mental disease, is that we do not know how far general intelligence is related to these specific functions, and furthermore, there is assumed in the method an artificial

separation or distinction of the functions of the mind from each other and from the emotional nature.(18)(22)

Intelligence as voluntary adaptability. Although the expression *general intelligence* remains ambiguous, nevertheless much has been gained by the movement to limit and circumscribe definitely what we shall denote by *general intelligence* in the practice work of testing. Any pragmatic definition doubtless will be unsatisfactory to the metaphysically minded; nevertheless it has been pointed out that we do not have to be able to define a thing truly before we are able to use it, for example, electricity.

The movement to limit the meaning of the expression general intelligence is discerned in the work of such investigators as Binet, Burt, Spearman, Stern, and Terman. Stern, as translated by Whipple, felicitously expresses a widely accepted working definition as follow: *Intelligence is a general capacity of an individual to adjust his thinking to new requirements: it is general mental adaptability to new problems and conditions of life.*(22) The definition is not final and denotes something quite different from that implied in the common loose use of the expression. It denotes by general intelligence essentially a mental capacity for voluntary, advantageous adaptability to definite, new conditions.

Testing intelligence. Mental testing is very practically related to contemporary educational and applied psychology as developed by Thorndike, Hollingworth, Judd, Dearborn, Freeman, Starch, Woolley, Colvin, Gordon, and others. Indeed, it is impracticable to draw rigid lines between the three kinds of experiments in educational and applied psychology, viz.: (1) Experiments upon the learning process, upon individual differences, etc.; (2) measurements of achievement in school subjects, such as spelling, reading, writing, arithmetic; (3) mental tests to measure specific traits, or attitudes, or general intelligence.

We have already referred to contemporary uses of mental tests for the quick selection of good promotive material in indus-

try and in the schools. A psychological experiment of the laboratory and research type, is simply an introspection under controlled conditions. A mental test resembles it in that conditions similarly must be controlled, and accuracy of observation and report must be secured. It differs from the old-time psychological experiment in that emphasis is placed upon behavior, performance, rather than upon introspection. It can be used therefore with children and with those untrained in psychological introspection. The purposes of mental tests are also becoming restricted and more clearly specified, such as, to ascertain the presence and amount of certain traits, or to measure aptitudes for designated mental and physical performances, or to ascertain the relative amount of "general intelligence." The technics of the trained psychologist, of the statistician, and of the skilled teacher are being focused upon the derivation and standardization of mental tests. A sound appraisal of their limitations and values always is desirable, but already far more good results from mental tests are accruing, than have been secured from the merely laboratory type of psychological experiment, which has been a disappointment in pragmatic uses.

Standards of intelligence, in army, in university. We are printing Figure VIII and Table XXI which are examples of recent uses of the Army Intelligence Tests. In Figure VIII are shown the scores made by men classified in various occupational groups within the Army.(1) Although the results are open to certain criticism they mark the beginning of a real occupational psychology. However, it is not known just what grade of occupational skill is actually represented by the men classified in the different groups, and the aspects of intelligence measured by the particular test do not give accurately comparable pictures of the "general intelligence" of the men, defined in broad terms. In Table XXI are given the results of the application under the writer's direction of Army Tests (Alpha-Form 6) to about 3500 students in the University of Illinois during 1919.(7c)

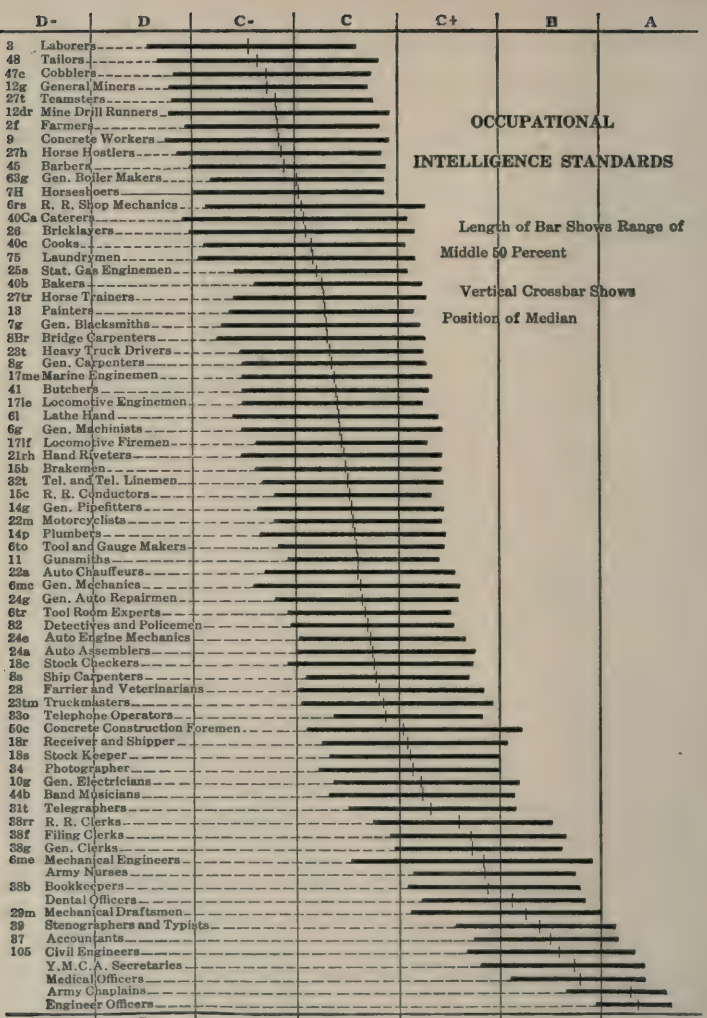


FIG. VIII.—OCCUPATIONAL INTELLIGENCE STANDARDS IN THE UNITED STATES ARMY

Bar shows range of middle 50 per cent. The vertical cross bar shows position of median. The figure is based on data for approximately 36,500 men. Numbers at extreme left are key numbers of occupations. Data taken from soldiers' Qualification Cards.[1]

TABLE XXI

Intelligence Scores at University of Illinois

College or School	Freshman	Sophomore	Junior	Senior
Liberal Arts and Sciences				
Median	147	145	145	151
High Score	188	206	192	206
Low Score	52	70	80	79
Students taking test first time	489	278	278	229
Commerce				
Median	140	151	151	150
High Score	193	197	206	169
Low Score	51	73	74	88
Students taking test first time	218	118	78	25
Engineering				
Median	140	144	147	144
High Score	196	191	193	191
Low Score	41	46	73	87
Students taking test first time	304	123	102	69
Agriculture				
Median	139	138	137	145
High Score	199	197	189	186
Low Score	74	63	49	96
Students taking test first time	134	67	48	42
Law	1st year	2nd year		
Median	163	...		
High Score	178	192		
Low Score	112	129		
Students taking test first time	11	9		
Music				
Median	121	131	...	...
High Score	159	179	166	041
Low Score	80	103	110	120
Students taking test first time	15	11	9	5
Library	1st year	2d year		
Median	...	...		
High Score	198	172		
Low Score	92	146		
Students taking tests first time	7	5		
Graduate	1st year	2d year	3d year	
Median	150	156	155	
High Score	191	205	207	
Low Score	80	105	96	
Students taking test first time	90	37	14	

Sex Differences in the College of Liberal Arts and Sciences

Freshmen		Sophomore		Junior		Senior	
M	W	M	W	M	W	M	W
149	136	150	140	147	143	159	147

Interpreting tests. To understand Army scoring, it should be borne in mind that the maximum score possible in the Alpha tests is 212 points. The letter equivalents are assigned as follows:

A = 135–212; B = 105–134; C+ = 75–104;
C = 45–74; C− = 25– 44; D = 15–24; D− = 0–14.

We believe we have already emphasized fairly the pitfalls lurking in the use of mental tests, notwithstanding their demonstrable and growing values in the schools and in industry. (See pp. 398 and 421). Caution must be used particularly in the management of tests given simultaneously to groups of persons. Group tests are becoming more popular because of obvious economies of time and labor in the administration of the same. However, there are certain difficulties in a group test that must be carefully considered. The person in a group reacts differently than when alone. In a group distraction may occur, or discomfort, interruption, negligence, inattention, cheating. City and country children may act with characteristically different attitudes in group and in individual tests respectively, and in the presence of strangers. A skilled examiner tactfully strives to combat these factors in order to prevent the entire invalidation of results.

Not sufficient for guidance. To date, attempts to build a system of vocational guidance relying chiefly upon mental tests have failed. Hollingworth has shown that such attempts, as in the case of palmistry, fortune-telling, phrenology, have long been a persistent, illusory pursuit.(8) It is perhaps futile to hope that any adequate vocational guidance of youth ever will depend chiefly upon mental tests of ability or aptitude. Practical vocational guidance or advisement has many inseparable phases or steps, such as: The matter of personal choice, the systematic study of industries and occupations, the disclosure of opportunities, educational guidance, training for citizenship,

training for definite occupation, placement, facilitating promotion, follow-up work. A man who would solve such complicated problems solely and exclusively by the use of "tests" be they derived from some physiognomic delusion, or phrenological chicanery, or be they genuine measures of general intelligence, is probably either a faker or a simpleton, and possibly both.

Students of modern mental tests, and social workers who witness the use of such tests upon juvenile delinquents, the feeble-minded, and the unfortunate, know practically that no mental test or scale in existence used alone is sufficient to serve as the criterion in business, industry, institution, school, or court, of an individual's fitness or destiny, when the data concerning the hereditary, environmental, and physiological conditions of the individual are unknown or neglected. A few enthusiasts with Binet or other tests have exhibited an almost superstitious belief in the magical efficacy of their devices, which is as foolish as the stiff-necked opposition to all thoroughgoing studies of each markedly exceptional individual for whom a decision regarding treatment or disposition must be made, whether in school or court. In the investigation of hundreds of cases of children and adults from the juvenile court, or the public schools, or the university, the writer has found it indispensable to combine and to review the data obtained from physicians, teachers, and social workers, with the results of his own mental testing with the form-board, with the Binet, with the Healy, and other good instruments of mental measurement, before drawing conclusions about an individual. Tests, however, have a valid function in this work.

Measurement vs. guess. In business as well as at school we all judge or estimate the general intelligence of our friends, whether or not we use formal tests. The refined, scientific judgment relies rather upon the application of a standard unit than merely upon opinion or comparisons. The mastery of heat, electricity, and metals is due in last analysis to the use of stand-

ard units. Quantitative physics and chemistry have made possible the gigantic ocean vessel amenable in control to the brain and hand of one man, in distinction from the raft and canoe of our ancestors. The goal of science is *control*. Ultimately better control of the processes and results of education may accrue from the substitution of quantitative measurement in place of prejudice and opinion.

Judging others. Both teachers and also employment managers systematize their use of opinion in estimating the worth of human beings although they may not use mental or other formal tests. Such systematized judgments we must rely upon largely, but they have severe limitations in respect to accuracy. For example, consider two illustrative cases—one concerning students, the other business employees.

Students. A familiar experiment in educational psychology requires a group of teachers acting individually to mark or grade the same examination paper and then to study the resulting variation in judgments of value. Kelly reports upon such an experiment at Harvard, as follows:

> An examination of the teaching in the Division of Economics at Harvard University was completed by the Division of Education of that university in September, 1916. It includes a study of marks given by seven instructors who graded ten mid-year examination books. In each book there were ten answers, and each instructor gave a separate mark for each answer, as well as a mark for the book as a whole. All of the questions proposed in the examination were asked in such a way that there could be no fundamental disagreement as to the statement of fact involved in any given answer. The table given below shows how widely the instructors varied in their estimate of the ten books:

Number of Book	Highest Mark	Lowest Mark
1	95	75
2	81	69
3	81	66
4	88	60
5	85	65
6	84	62
7	71	57
8	69	50
9	63	46
10	47	28

Even greater variations appear in marking the separate questions. Only one answer out of the hundred which appeared in the ten books received the same mark by all seven instructors; and there were only seven cases where five or more professors agreed upon the rank to be given a question. Variations in marking were found to be so great that under certain circumstances a professor's tendency to mark high or low could determine a man's success, not only in attaining a degree with distinction, but even in securing his A. B. degree at all. Similar discrepancies are to be found in the marks of school teachers everywhere, the widest differences appearing in the judgments of any group of instructors who are asked to mark the papers of students in any subject.(12).

Employees. The second illustration refers to variability in judgment in appraising candidates for employment, and employees. Employment managers formulate for themselves certain standards of appraisal which more or less consciously they use as candidates for position or promotion are under consideration. Scott, of Northwestern University, thus experimented with six experienced managers:

There were thirty-six candidates for a selling position in a firm employing a thousand salesmen scattered over the United

States. District managers were in charge of subdivisions of the whole territory.

These district managers in the past selected their salesmen more or less independently. There was no way to tell whether the different managers would have agreed as to which of all the applicants to reject and which ones to select. The following experiment makes clear the amount of agreement and disagreement between the selections of six of these district managers.

Thirty-six applicants for a selling position for this company assembled at Evanston, Illinois. Each of the six managers occupied a room in Northwestern University Psychological Laboratory where he interviewed each of the thirty-six applicants. Each manager was instructed to assume that he alone stood between the applicant and the pay roll of the company. This was a responsibility that every manager was familiar with. Following the interview each manager made a report on each of the thirty-six applicants and indicated which was the most likely candidate, the second best, the third best, etc. . . . Applicant I was thought to be the fifth best by Manager A; the eleventh best by Manager B; the second best by Manager C; tied for first place by Manager D; third by Manager E; and second best by Manager F.

It was the intention of the company to select about one-half of the applicants. It might have been assumed that these six district managers would have agreed pretty closely as to whether a particular applicant was in the upper half of a group or in the lower half. As a matter of fact, in the case of twenty-eight of the applicants, these six managers disagreed as to whether the individual should be placed in the upper or the lower half of the group. All agreed that Applicants I, II, IV, VI, and XVI should be in the upper half, and that applicants XXXIV, XXV and XXVI should be in the lower half. An inspection of the results showed much agreement among the six managers, but the disagreements were striking. Thus applicant XVII was thought to be the third best of the group of thirty-six by Manager C; but was placed thirtieth by Manager B. Applicant XVIII was thought to be the best in the group by Manager E; but was ranked as tied for the thirty-second place by Manager D. Yet there is reason to believe that these six gentlemen agreed even more closely than is the case with employment agents in general.

The ordinary method of selecting employees is by means of inspection, interviews, and recommendations. These are not worthless and they secure results much better than would be done by flipping a coin or by drawing the names by chance out of a hat. Such methods are, however, unscientific, unsatisfactory, and should be supplemented.(21b)

Hollingworth's experiments. Other experiments indicate abundantly the variation and the unreliability of appraising the virtues or defects of others or of oneself. Hollingworth secured results about similar to the above by having students who knew each other score both themselves and their acquaintances upon these traits: *Neatness*, *Intelligence*, *Humor*, *Conceit*, *Beauty*, *Vulgarity*, *Snobbishness*, *Refinement*, *Sociability*.(8)

The army ratings. Factors that make for definiteness in the qualities in men to be judged tend toward agreement in observers. The United States Army utilized a method in rating officers which has worked fairly well and helped to solve this problem of securing reasonable agreement in judgments of men. The scale is made definite by means of this ingenious process: Each rating officer creates his own scale with five headings and based upon officers of various merits whom he has known well. Under each of the five headings he places appropriately five names of such officers of his acquaintance—altogether twenty-five names. In rating his subordinates he then compares each subordinate actually judged with the men upon his fixed scale. A man's total rating will be the sum of the scores under all of the five headings. We are printing below a sample scale with the names of the twenty-five officers whom the maker of this scale uses as his standards of comparison in rating his subordinates.(17)

THE RATING SCALE CARD

I. Physical Qualities Physique, bearing, neatness, voice, energy, endurance. Consider how he impresses his command in these respects.	Highest: *Capt. John Doe*.....15 High: *Capt. H. Black*.....12 Middle: *Capt. R. White*..... 9 Low: *Capt. W. Smith*..... 6 Lowest: *Capt. E. Jones*..... 3
II. Intelligence. Accuracy, ease in learning; ability to grasp quickly the point of view of commanding officer, to issue clear and intelligent orders, to estimate a new situation, and to arrive at a sensible decision in a crisis.	Highest: *Capt. R. White*.....15 High: *Capt. B. Gray*.....12 Middle: *Capt W. Smith*..... 9 Low: *Capt. J. Brown*..... 6 Lowest: *Capt. E. Jones*..... 3
III. Leadership. Initiative, force, self reliance, decisiveness, tact, ability to inspire men and to command their obedience, loyalty and cooperation.	Highest: *Capt. B. Gray*.....15 High: *Capt. John Doe*.....12 Middle: *Capt. R. White*..... 9 Low: *Capt.W. Green*..... 6 Lowest: *Capt. R. Blue*..... 3
IV. Personal Qualities. Industry, dependability, loyalty; readiness to shoulder responsibility for his own acts; freedom from conceit and selfishness; readiness and ability to coöperate.	Highest: *Capt. H. Black*.....15 High: *Capt. W. Smith*.....12 Middle: *Capt. R. White*..... 9 Low: *Capt. A. Old*..... 6 Lowest: *Capt. J. Young*..... 3
V. General Value to the Service. Professional knowledge, skill and experience; success as administrator and instructor; ability to get results.	Highest: *Capt. R. Day*.....40 High: *Capt. H. Night*.....32 Middle: *Capt. R. Roe*.....24 Low: *Capt. A. Old*.....16 Lowest: *Capt. R. Blue*..... 8

This scale would be used in rating First Lieutenants. The officers listed would be regarded as the "Standards."

This interesting plan is being extended to business use. P. J. Reilly has devised nearly such a scale for the rating of foremen, his five qualities for judging being these: (1) *Trade Ability;* (2) *Production;* (3) *Administration;* (4) *Training;* (5) *Special Executive Qualifications.*(12)

Other Psychological Applications

Mental hygiene. Very many of the thousands of persons now in hospitals for the insane were once pupils in schools, and, later, workers in industry. There are millions of persons who do not suffer from dementia (mental bankruptcy) or amentia (arrest of mental growth) who nevertheless are handicapped by faulty mental habits such as chronic worry, anxiety, fear; indecision, vacillation, inattention, lack of concentration; indolence; immorality. The tendency of ameliorative effort to-day is in the direction of *prevention* rather than mere cure. The controllable conditions of work, play, sleep, recreation, and one's interest and satisfaction in his vocation are potent factors of mental stability.

The psychopathic employee, or employer, or pupil, is always a troublesome proposition. Directors of vocational education have not time or inclination or preparation to go into the matter of diagnosis of the mentally defective. The question in a crisis properly will be submitted to a psychiatrist. A qualified psychiatrist is a physician who has been specially trained in the study of abnormal psychology and also in the treatment of the mind. An elementary knowledge of such matters upon the part of an expert vocational officer might be of service in enabling him to detect more readily the necessity of prompt reference of a case to a qualified psychiatrist for detailed study and wise treatment.

Detecting new capacities. At least an attitude might be cultivated in personnel and vocational experts, by means of the skillful presentation in conferences and readings of the essential

principles of abnormal psychology, which might help them toward these two desirable results: (1) To be able to recognize more accurately the various factors in the mind of worker or pupil, to appreciate better his point of view, and (2) to detect points of undiscovered capacity as a basis for occupational training, as well as serious defects interfering with any proposed vocational training, or job.

Fatigue. Work is not all immediately pleasant, and for instructors to be able to predict something definite about the progress and process in the acquisition of skill and of knowledge is worth while. It has not often been found desirable or practicable in schools or shops to plot curves of the changing speed and accuracy from hour to hour, and from day to day. It is quite worth while, however, for an instructor or a superintendent to know that habit-building in many instances can be charted (as for example in learning to typewrite, or to run a machine), that various physical and mental factors effect the rise and fall of the learning curve of an individual engaged in daily attack upon a work of labor or play; and that "plateaus" where no progress is made are likely to occur, calling for urging of the student, or for rest, as the circumstances dictate. Here may be found useful for reference some of the studies of Bryan and Harter, Book, and Thorndike.

Dependence upon special practice. A confirmed tendency in school practice is to depend largely upon formal discipline or doing some painful task in some specific subject in the expectation that therefrom will invariably accrue, or transfer, a general benefit. Acquire accuracy, or speed, or good judgment, or good memory in the doing of one thing and the effect will transfer equally to other activities in life, it was believed. Upon this plea many a useless and ill-taught course remains in the school programs, and it has also affected some of the methods and aims of manual training. It is the exploded doctrine of extreme formal discipline.

In giving vocational instruction, this tendency must be guarded against, especially in the necessary book work where conventional pedagogues are inducted into the service. The present status of the doctrine of special practice is approximately this: (1) There is a possibility of considerable transfer effect (through "ideals of method," "generalized experience," "identical elements," etc.) of the results of a special practice. (2) The actual amount of transfer is usually a false assumption. (3) Much of the present literature is controversial and contradictory. One's attitude toward the whole matter of school ideals, courses of study, and methods will be determined largely by his attitude upon formal discipline. If our assumption concerning the significance or practical outcome of the position of educators upon this question be accepted, it seems that vocational teachers might well consider the results of the studies of Thorndike, Colvin, and Judd upon this central topic of educational science.

Economy in learning. There are other general principles of psychology to be made conscious to every student and teacher who seeks success with economy of effort in the pursuit of skill and knowledge.

For example, there are the three general modes of all learning: (1) *Learning by trial and error*, which is the animal way, in human beings called "the school of experience"—an effective but costly school. (2) *Learning by imitation*—a common, almost universal practice—but limited where new achievement is sought. (3) *Learning by use of free ideas, reasoning*—the method of the thinker, the inventor, the creator.

Realization of the possibilities of the habit forming tendency is also of personal value to students and industrial workers. Habit is primarily a modification of our original nature, a change which we have gained through individual experience. Habits, good and bad, as James shows,(9) may be formed, like the permanent bending of a metal rod by many repetitions, or by one

strong intense effort. A process made *habitual* becomes more *accurate*, more *speedy*, less *conscious*, hence a useful habit well acquired makes for mental economy. The threefold law of habit-building as stated by Bagley is this: (a) Focalization of consciousness upon the combination of movements to be made automatic; (b) attentive repetition of this behavior; (c) permitting no exceptions to occur until the habit has been established.(3)

Instructional methods. In preceding chapters we have repeatedly touched upon questions of methods in teaching. We believe, that given a thorough knowledge of one's subject or trade, and a good knowledge of human nature—preferably supplemented by facts from scientific psychology and physiology—an enthusiastic teacher need not bother about the various classroom devices offered by advocates of method and technic in classroom instruction.

However, teachers rightly demand of professors and researchers some analysis and practical help in the matter of effective teaching. Books on the subject are as a rule unsatisfying. So profitable in the past has been the publication of books on pedagogy considered chiefly as "method," it came to pass that many relatively unscientific writers entered this field of authorship, while men of truly scientific standing in psychology were too busy to attack the problem of method or were indifferent. It has come about, therefore, that the word "pedagogy," either from this cause, or by reason of its historical origin, brings not infrequently a contumelious reaction in real scholars. Latterly it is becoming the fashion to avoid the word "method" altogether and substitute for it some other expression. That great Frenchman, Binet, complained that too many pedagogical discussions were mere *verbiage*. What is needed, he pointed out, is to subject pedagogical theories or hypotheses to actual trial, and where possible under experimental conditions. Herein lies much of the value of the work of such researchers as Binet in

France, Meumann in Germany, Winch in England, and of Rice, Corman, Ayres, Thorndike, Judd, Dearborn, Whipple, O'Shea, Courtis, Starch, Ballou, and Freeman in America. With regard to *method*, the desired procedure is to try out under experimental conditions any educational process that promises to make for economy of time and effort and to record and analyze the results.

Principles of method. Conclusions regarding method, based more upon philosophical than upon experimental evidence, abound in the literature of the history of education—from Quintilian to Dewey. For example, John Dewey deplores the currency of wrong conceptions of the value of logical methods appealing to matured, developed experience, to the neglect of practices that have been found helpful in teaching. Such practices are considerations of order, sequence, definiteness, fit adaptation of means to ends, thoughtful surveys and reviews of ground traversed. Concerning method, "the way of going at a thing" as related to teaching, he says:

> Strictly speaking, method is thoroughly individual. Each person has his own instinctive way of going at a thing: the attitude and the mode of approach and attack are individual. To ignore this individuality of approach, to try to substitute for it, under the name of "general method," a uniform scheme of procedure, is simply to cripple the only effective agencies of operation, and to overlay them with a mechanical formalism that produces only a routine conventionality of mental quality.
>
> The primary factor in general method, so construed, is the existence of a situation which appeals to an individual as his own concern or interest, that is to say, as presenting an end to be achieved, because arousing desire and effort. The second point is that the conditions be such as to stimulate observation and memory in locating the means, the obstacles and resources that must be reckoned with in dealing with the situation. The third point is the formation of a plan of procedure, a theory or hypothesis about the best way of proceeding. The fourth is putting the plan into operation. The fifth and last is the comparison

of the result reached with what was intended, and a consequent estimate of the worth of the method followed, a more critical discernment of its weak and its strong points. These five steps may be reduced to three more generic ones. The first and fundamental condition of right method is the existence of some concrete situation involving an end that interests the individual, and that requires active and thoughtful effort in order to be reached. The second is consideration of the nature of the problem, the difficulty or perplexity involved in reaching the end set, so as to form a suggestion or conjecture as to the best way of proceeding to solve the difficulty. The third is the overt effort in which the thought of the plan is applied and thereby tested. Scientific method will be found to involve exactly the same steps, save that a scientific mode of approach implies a large body of prior empirical and tentative procedures which have finally been sifted so as to develop a technic consciously formulated and adapted to the given type of problem.(4)

Method, as indicated above, is essentially a problem of the individual, but there seem to be some principles of educational practice of quite general applicability to the educative process. Suzzalo emphasizes six principles of this kind:

1. *Aim.* It must be recognized that the ultimate function of the school is social, however variously the schoolmaster may organize or emphasize the specific aims or values.

2. *Interest.* The fundamental determinant of the teaching process is the unfolding nature of the child. To recognize stable interests as the basis for teaching is to guarantee absorption in the work at hand.

3. *Expression.* Normally a person learns by doing.

4. *Motivation.* The person should be enabled to feel that the acquisition of facts or skill is related to his own need to act.

5. *Concentration.* The center of the school curriculum is not in any one subject (geography, history, science, literature) but in the active needs of the child.

6. *Apperception.* What the child can learn depends upon his previous knowledge.

Concrete types of teaching. The same author further organizes the types of teaching in common use into sixteen groups, namely: (1) Expression; (2) practice; (3) objectification; (4) induction; (5) deduction; (6) formal association; (7) study; (8) discipline; (9) appreciation; (10) instruction; (11) investigation; (12) development; (13) drill; (14) examination; (15) review; (16) assignment.(23)

Very different from this type of review of the principles of method, is an account of the kinds of devices for instruction found in industrial and business schools. For example, a committee of the National Association of Corporation Schools ascertained by questionnaire from thirty-three mostly large firms two sets of facts: (1) Subjects taught; (2) methods employed in teaching the same. A concise view of the information obtained from them is shown in Table XXII on page 442.

The Meaning of Life Work

Three terms distinguished. Education for vocation should have a noble meaning, but the terms *work*, *drudgery*, *vocation* should be well understood. *Work* is to be distinguished from mere drudgery and toil. *Drudgery* is more familiar than work to mankind because of their lack of opportunity, or lack of physical well-being, or because of mental arrest, or on account of mal-adjustment of individual and of activity. Ingredients of *drudgery* are too long hours, uninteresting tasks, unpleasant supervision, ill health. *Work*, at its best in human life, is something more than the mechanical conversion of energy, such as motion of wheels into heat or light or electricity. *Work* means effort, but conscious movement directed toward a remote goal. It is not mere painful action, nor is it an incessant insect-like being-busy that accomplishes little. *Work* at its best is not only purposeful activity directed to a future end, it is also activity tinctured with the spirit of play, and perhaps in the course of evolution both the physical and mental bases of work

TABLE XXII

Various Methods Employed by Different Organizations in Conducting their Educational Work

Classification by Industry of Corporation Schools	Study and Recitation Method	Supervised Study Method	Library Method	Lecture Method	Correspondence Method	Inspection Trips Method	Laboratory Method	Project Method	Seminar Method	Conference Method	Objective Method	Miscellaneous Methods
Locomotive Manufacturing		*		*		*	*					
Manufacturer	*	*		*		*	*	*		*		
Public Service Company		*					*					
Automobile Manufacturing Co.		*	*	*			*					
Printers and Bookbinders	*	*	*			*	*					
Steel Manufacturing Co.	*											
Steel Manufacturing Co.		*				*						
Steel Manufacturing Co.		*		*		*	*	*				
Hardware Manufacturers				*								
Hardware Manufacturers	*	*	*	*	*	*	*			*		
Mail Order Company	*		*	*		*	*					
Leather Manufacturing Co.	*											
Manufacturers of Wearing Apparel			*	*								
Manufacturers of Electrical Apparatus	*	*	*	*		*	*					
Railroad		*		*			*					
Manufacturers of Machinery	*			*		*	*					
Metal Manufacturers	*	*	*	*		*	*	*	*			
Telephone Company	*			*			*					
Telephone Company	*			*			*					
Manufacturer of Rubber Goods	*	*		*				*		*		
Metal Manufacturer	*			*								
Manufacturer of Machinery	*	*	*			*	*	*	*	*		*
Railroad				*		*						
Construction Engineers				*		*						
Oil Refiners	*	*	*		*	*	*	*		*		
Automobile Manufacturers		*			*						*	
Railroad	*	*			*							
Specialty Manufacturers	*	*		*		*	*	*		*		
Metal Manufacturer		*										
Telephone and Telegraph Co.	*			*	*		*	*				
Corset Manufacturers				*	*		*					
Manufacturer of Machinery					*		*			*		
Oil Refiners		*			*							

* Asterisk indicates that this method is employed by organizations shown.

and play have a common development, as, for example, in the inborn tendency to constructiveness. This instinct of constructiveness has later developments both in the make-believe creations of childish hands and also in the production of things of value—houses, bridges, ships, which are largely, too, the product of economic pressure. The rich results of the work of the creative artist, or inventor, or statesman often come through prodigious activities, and in these play and work have blended.

Experimental, genetic, pedagogical, and social studies of work, physical and mental, have made somewhat clearer the meanings and significance of drudgery, toil, fatique, play, and avocation, and the value of hygienic efficiency. We know that work, defined as conscious effort toward a future ideal, has uniformities in process, and a knowledge of these uniformities gives us control, a result that is the ultimate end of many sciences. In genuine work there is mental concentration, pleasurable interest, organization of details, elimination of non-essential movements. Work, with sufficient repetition and with sufficient intensity, tends to make motion become more accurate, more speedy, less conscious, thus with every achievement equipping the organism for more and better work.

Employers and employees and teachers who regard daily work only as a "job" without regard to the development of the individual or an ambition to build up a vocation of ascending values and rewards are on dangerous ground. Mr. Fuld thus expresses the fact:

> The worker's most important possession is his job. Upon his job depends his health, leisure, power, living conditions, and his happiness and the happiness of all who are dear to him. If he is separated from his job it is a personal calamity of the greatest importance, and if he believes himself unjustly separated from his job he becomes a national menace and a possible officer in the ranks of Bolshevism.
>
> A worker cannot, when separated from his job, rely upon his accumulated wealth to support himself until he gets a new one, because he

has no capital. A worker cannot, when separated from his job, spend his leisure in browsing among the philosophers of past ages nor can he readily embark upon a new sea of endeavor, because he has no education other than the training he has received from his experience. A worker cannot, when separated from his job, enjoy himself until he finds another, because there can be no happiness when the family larder is empty and the landlord is clamoring for the rent.(5)

Guidance difficult. Jobs are necessary fragments of vocation, but *vocation* should mean *life-work* and nothing less. Life-work ideally is found in the adjustment of the individual through right education meeting opportunity in business or industry or profession. They who undertake that new attempt at conscious evolution—organized vocational guidance, therefore are superficial in method if they do not understandingly unravel the tangle of inter-dependent factors that determines the careers of boys and girls. *Opportunity* must be known, sifted, exhibited; this means a knowledge of economic and social conditions, of the status of local industries, commerce, trades, professions, occupations. The *individual* must be known; this does not imply mere knowledge of that non-existent phantom, the "average boy or girl" portrayed in text-books; it is a demand that we be able to know the individual by a method more sure than casual observation, and demands the best of psychology. In the study of individuals will be encountered also those complex factors, *personal preference and choice*,—inevitable in all fitting of human beings into appropriate grooves, or changing grooves to fit human beings.

Ideal conceptions. There is a broader vision of vocational education than to think of it confusedly as some short avenue to a commercial position or to superficial success. Education for vocation, or for life, should enable a man or woman to bear the burden of life rather than to become a parasite. It should tend to develop health, independence, ambition, active morality within our great democracy. Education encourages in one the

desire to do some one thing well, perhaps to do it better than any one else, and by the exercise of this trained ability to make a contribution to the betterment of human life. This conception of education forever banishes the false notion that education is merely for the favored few, either solely for "idle gentlemen's sons," or for "sons of the working people." It opens new possibilities in the adjustment of individual capacity to the various employments and dignifies these with importance, whether these vocations be those of the farmer, the mechanic, the seamstress, the cook, the mill hand, the sailor, the stenographer, the actor, the home maker, the engineer, the writer, the teacher, the lawyer, the doctor, or the minister.

Maintaining ideals. The schools should assist in making these adjustments. The public schools are intended to serve the masses for the ends of democracy. Vocational education is not merely to be added to our present system of education. The existing school system needs gradual renovation from kindergarten to university, until wise articulation of the vocational aim with the disciplinary and cultural aims has been effected. In this work of renovation we are ever to have in view the goals of ethical idealism as well as the immediate acquisition of skill and knowledge. The undertaking is complicated and difficult. Programs, courses of study, and curricula, preparation and selection of teachers and officials, the choice of sites and plan of buildings, the purchase of supplies and equipment, the problems of finance, legislation, the study of industries and business, occupational analyses and provisions for preliminary research—all these topics involve unanswered questions remaining to be solved in a courageous and coöperative spirit.

Summary

The major subjects of this chapter, each of which merits much further study if the student is to acquire skill, as well as appreciа-

tion, in the use of psychology applied to industry, business, and education, are these four:

1. The nature of modern psychology, and the necessity of a calm, intelligent appraisal of both its values and its limitations. The public should discriminate between fraudulent practices in the name of psychology by phrenologists, physiognomists, clairvoyants, and other charlatans, and the work of men and women enrolled in the American Psychological Association, or under the National Council of Research.
2. The problem of measuring abilities and traits—in the schools, in the army, and in industry, by a procedure more accurate than guesswork. Considerable advance has been made in these fields by recent experiments with an applied psychology utilizing tests of intelligence, rating scales, and exposing the fallacy and variability of subjective judgments.
3. Other contributions of applied psychology, although it is in its infancy, of some significance for vocational education, relate to the conservation of mental health, and to economy in the learning process. Valuable also are the established principles organizing our knowledge of habit formation, and demanding trial or experiment rather than debate from those who advocate specific methods of instruction. The result should eventually give better control of human nature for the ends of education and democracy.
4. Vocation as distinguished from job, drudgery, toil, labor, or avocation means *life-work*. At its best, life-work is the chosen activity of an individual adjusted through right education meeting opportunity in business or industry or profession. However humble or exalted one's place or temporary job may be, it becomes a part of his vocation and has dignity if only it is in accord with his best capacity

and opportunity and the higher ideals of himself and his countrymen. It is the function of a legitimate vocational education to assist in this adjustment.

Problems

1. Why has scientific psychology made relatively slow progress compared with chemistry or physics?
2. Indicate the dangers of relying too much upon psychology in solving problems of business or industry.
3. Endeavor to make valid distinctions between the true meanings of the terms: capacity, trait, ability, instinct, habit.
4. What is a practical definition of general intelligence?
5. Write a paper bringing out in succession the purposes and methods of (a) trade tests (see Chapter XII), (b) intelligence tests, (c) rating scales.
6. Name the five qualities by which officers in the Army were rated for promotion.
7. Explain how each rating officer must first make his scale upon the basis of his own acquaintances.
8. Select an occupation (such as manager of insurance office, train master, quarry foreman, conductor on steam railroad, ship captain) and determine after adequate first-hand study and conferences the five significant qualities for that particular occupation. Then devise a plan of scoring for promotion similar to the Army plan of rating officers.
9. Have several persons authorized to recommend for promotion in that occupation try out your scale, and contrast the results with the actual records of the persons scored.
10. How can you overcome the difficulty of having those who use a rating scale agree upon an exact definition or interpretation of the qualities or traits to be scored?
11. Select certain qualities as Intelligence, Honesty, Courage, Refinement, Egotism, Leadership, Cleanliness. Find a

class or group of twenty-five persons who know each other pretty well. Upon a blank form prepared for the purpose, have each person rate both himself and all of the others in these qualities on a percentage scale, where 100 denotes the most possible, and zero denotes none of a quality. Study the results for variations as concern: (1) The persons; (2) the qualities; (3) difference between one's scoring of self and of self by others.

12. Tabulate for a given hard occupation which you may study the actual causes of turning work into drudgery, such as: Too long hours, speed, unpleasant supervision, lack of interest, unsanitary conditions, ill health.
13. Devise an experiment to keep track of and to chart the progress of acquiring skill by daily practice in a given operation—as learning to typewrite, or to run a machine. The daily practice should be of same duration, at same hour, and physical and mental conditions should be kept uniform throughout. Memoranda daily should be made of various causes affecting progress.
14. Returning to the early pages of the first chapter of this book review the statements showing that ideals as standards of conduct must be developed along with skill and knowledge, if society is to be freed from misuse of power and injustice.
15. After rapidly reviewing the whole field of vocational education lower than college grade, as discussed in this book, single out the most urgent problems inviting intensive, further study.

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APPENDIX

Smith-Hughes Act of Congress (Senate Bill 703, 1917)
Smith-Sear Act of Congress (Senate Bill 4557, 1918)

[PUBLIC—No. 347—64TH CONGRESS.]

[S. 703.]

An Act To provide for the promotion of vocational education; to provide for coöperation with the States in the promotion of such education in agriculture and the trades and industries; to provide for coöperation with the States in the preparation of teachers of vocational subjects; and to appropriate money and regulate its expenditure.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there is hereby annually appropriated, out of any money in the Treasury not otherwise appropriated, the sums provided in sections two, three, and four of this Act, to be paid to the respective States for the purpose of coöperating with the States in paying the salaries of teachers, supervisors, and directors of agricultural subjects, and teachers of trade, home economics, and industrial subjects, and in the preparation of teachers of agricultural, trade, industrial, and home economics subjects; and the sum provided for in section seven for the use of the Federal Board for Vocational Education for the administration of this Act and for the purpose of making studies, investigations, and reports to aid in the organization and conduct of vocational education, which sums shall be expended as hereinafter provided.

SEC. 2. That for the purpose of coöperating with the States in paying the salaries of teachers, supervisors, or directors of agricultural subjects there is hereby appropriated for the use of the States, subject to the provisions of this Act, for the fiscal year ending June thirtieth, nineteen hundred and eighteen, the sum of $500,000; for the fiscal year ending June thirtieth, nineteen hundred and nineteen,

the sum of $750,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty, the sum of $1,000,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-one, the sum of $1,250,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-two, the sum of $1,500,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-three, the sum of $1,750,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-four, the sum of $2,000,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-five, the sum of $2,500,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-six, and annually thereafter, the sum of $3,000,000. Said sums shall be allotted to the States in the proportion which their rural population bears to the total rural population in the United States, not including outlying possessions, according to the last preceding United States census: *Provided*, That the allotment of funds to any State shall be not less than a minimum of $5,000 for any fiscal year prior to and including the fiscal year ending June thirtieth, nineteen hundred and twenty-three, nor less than $10,000 for any fiscal year thereafter, and there is hereby appropriated the following sums, or so much thereof as may be necessary, which shall be used for the purpose of providing the minimum allotment to the States provided for in this section: For the fiscal year ending June thirtieth, nineteen hundred and eighteen, the sum of $48,000; for the fiscal year ending June thirtieth, nineteen hundred and nineteen, the sum of $34,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty, the sum of $24,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-one, the sum of $18,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-two, the sum of $14,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-three, the sum of $11,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-four, the sum of $9,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-five, the sum of $34,000; and annually thereafter the sum of $27,000.

SEC. 3. That for the purpose of coöperating with the States in paying the salaries of teachers of trade, home economics, and industrial subjects there is hereby appropriated for the use of the States,

for the fiscal year ending June thirtieth, nineteen hundred and eighteen, the sum of $500,000; for the fiscal year ending June thirtieth, nineteen hundred and nineteen, the sum of $750,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty, the sum of $1,000,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-one, the sum of $1,250,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-two, the sum of $1,500,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-three, the sum of $1,750,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-four, the sum of $2,000,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-five, the sum of $2,500,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-six, the sum of $3,000,000; and annually thereafter the sum of $3,000,000. Said sums shall be allotted to the States in the proportion which their urban population bears to the total urban population in the United States, not including outlying possessions, according to the last preceding United States census: *Provided*, That the allotment of funds to any State shall be not less than a minimum of $5,000 for any fiscal year prior to and including the fiscal year ending June thirtieth, nineteen hundred and twenty-three, nor less than $10,000 for any fiscal year thereafter, and there is hereby appropriated the following sums, or so much thereof as may be needed, which shall be used for the purpose of providing the minimum allotment to the States provided for in this section: For the fiscal year ending June thirtieth, nineteen hundred and eighteen, the sum of $66,000; for the fiscal year ending June thirtieth, nineteen hundred and nineteen, the sum of $46,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty, the sum of $34,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-one, the sum of $28,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-two, the sum of $25,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-three, the sum of $22,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-four, the sum of $19,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-five, the sum of $56,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-six, and annually thereafter, the sum of $50,000.

That not more than twenty per centum of the money appropriated under this Act for the payment of salaries of teachers of trade, home economics, and industrial subjects, for any year, shall be expended for the salaries of teachers of home economics subjects.

SEC. 4. That for the purpose of coöperating with the States in preparing teachers, supervisors, and directors of agricultural subjects and teachers of trade and industrial and home economics subjects there is hereby appropriated for the use of the States for the fiscal year ending June thirtieth, nineteen hundred and eighteen, the sum of $500,000; for the fiscal year ending June thirtieth, nineteen hundred and nineteen, the sum of $700,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty, the sum of $900,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-one, and annually thereafter, the sum of $1,000,000. Said sums shall be allotted to the States in the proportion which their population bears to the total population of the United States, not including outlying possessions, according to the last preceding United States census: *Provided*, That the allotment of funds to any State shall be not less than a minimum of $5,000 for any fiscal year prior to and including the fiscal year ending June thirtieth, nineteen hundred and nineteen, nor less than $10,000 for any fiscal year thereafter. And there is hereby appropriated the following sums, or so much thereof as may be needed, which shall be used for the purpose of providing the minimum allotment provided for in this section: For the fiscal year ending June thirtieth, nineteen hundred and eighteen, the sum of $46,000; for the fiscal year ending June thirtieth, nineteen hundred and nineteen, the sum of $32,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty, the sum of $24,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-one, and annually thereafter, the sum of $90,000.

SEC. 5. That in order to secure the benefits of the appropriations provided for in sections two, three, and four of this Act, any State shall, through the legislative authority thereof, accept the provisions of this Act and designate or create a State Board, consisting of not less than three members, and having all necessary power to coöperate, as herein provided, with the Federal Board for Vocational Education in the administration of the provisions of this Act. The State Board

of education, or other board having charge of the administration of public education in the State, or any State board having charge of the administration of any kind of vocational education in the State may, if the State so elect, be designated as the State Board, for the purposes of this Act.

In any State the legislature of which does not meet in nineteen hundred and seventeen, if the governor of that State, so far as he is authorized to do so, shall accept the provisions of this Act and designate or create a State board of not less than three members to act in coöperation with the Federal Board for Vocational Education, the Federal Board shall recognize such local board for the purposes of this Act until the legislature of such State meets in due course and has been in session sixty days.

Any State may accept the benefits of any one or more of the respective funds herein appropriated, and it may defer the acceptance of the benefits of any one or more of such funds, and shall be required to meet only the conditions relative to the fund or funds the benefits of which it has accepted: *Provided*, That after June thirtieth, nineteen hundred and twenty, no State shall receive any appropriation for salaries of teachers, supervisors, or directors of agricultural subjects, until it shall have taken advantage of at least the minimum amount appropriated for the training of teachers, supervisors, or directors of agricultural subjects, as provided for in this Act, and that after said date no State shall receive any appropriation for the salaries of teachers of trade, home economics, and industrial subjects until it shall have taken advantage of at least the minimum amount appropriated for the training of teachers of trade, home economics, and industrial subjects, as provided for in this Act.

Sec. 6. That a Federal Board for Vocational Education is hereby created, to consist of the Secretary of Agriculture, the Secretary of Commerce, the Secretary of Labor, the United States Commissioner of Education, and three citizens of the United States to be appointed by the President, by and with the advice and consent of the Senate. One of said three citizens shall be a representative of the manufacturing and commercial interests, one a representative of the agricultural interests, and one a representative of labor. The Board shall elect annually one of its members as chairman. In the first instance,

one of the citizen members shall be appointed for one year, one for two years, and one for three years, and thereafter for three years each. The members of the Board other than the members of the Cabinet and the United States Commissioner of Education shall receive a salary of $5,000 per annum.

The Board shall have power to coöperate with State boards in carrying out the provisions of this Act. It shall be the duty of the Federal Board for Vocational Education to make, or cause to have made studies, investigations, and reports, with particular reference to their use in aiding the States in the establishment of vocational schools and classes and in giving instruction in agriculture, trades and industries, commerce and commercial pursuits, and home economics. Such studies, investigations, and reports shall include agriculture and agricultural processes and requirements upon agricultural workers; trades, industries, and apprenticeships, trade and industrial requirements upon industrial workers, and classification of industrial processes and pursuits; commerce and commercial pursuits and requirements upon commercial workers; home management, domestic science, and the study of related facts and principles; and problems of administration of vocational schools and of courses of study and instruction in vocational subjects.

When the Board deems it advisable such studies, investigations, and reports concerning agriculture, for the purposes of agricultural education, may be made in coöperation with or through the Department of Agriculture; such studies, investigations, and reports concerning trades and industries, for the purposes of trade and industrial education, may be made in coöperation with or through the Department of Labor; such studies, investigations, and reports concerning commerce and commercial pursuits, for the purposes of commercial education, may be made in coöperation with or through the Department of Commerce; such studies, investigations, and reports concerning the administration of vocational schools, courses of study and instruction in vocational subjects, may be made in coöperation with or through the Bureau of Education.

The Commissioner of Education may make such recommendations to the board relative to the administration of this Act as he may from time to time deem advisable. It shall be the duty of the chairman

of the Board to carry out the rules, regulations, and decisions which the board may adopt. The Federal Board for Vocational Education shall have power to employ such assistants as may be necessary to carry out the provisions of this Act.

SEC. 7. That there is hereby appropriated to the Federal Board for Vocational Education the sum of $200,000 annually, to be available from and after the passage of this Act, for the purpose of making or coöperating in making the studies, investigations, and reports provided for in section six of this Act, and for the purpose of paying the salaries of the officers, the assistants, and such office and other expenses as the board may deem necessary to the execution and administration of this Act.

SEC. 8. That in order to secure the benefits of the appropriation for any purpose specified in this Act, the State Board shall prepare plans, showing the kinds of vocational education for which it is proposed that the appropriation shall be used; the kinds of schools and equipment; courses of study; methods of instruction; qualifications of teachers; and, in the case of agricultural subjects the qualifications of supervisors or directors; plans for the training of teachers; and, in the case of agricultural subjects, plans for the supervision of agricultural education, as provided for in section ten. Such plans shall be submitted by the State Board to the Federal Board for Vocational Education, and if the Federal Board finds the same to be in conformity with the provisions and purposes of this Act, the same shall be approved. The State Board shall make an annual report to the Federal Board for Vocational Education, on or before September first of each year, on the work done in the State and the receipts and expenditures of money under the provisions of this Act.

SEC. 9. That the appropriation for the salaries of teachers, supervisors, or directors of agricultural subjects and of teachers of trade, home economics, and industrial subjects shall be devoted exclusively to the payment of salaries of such teachers, supervisors, or directors having the minimum qualifications set up for the State by the State Board, with the approval of the Federal Board for Vocational Education. The cost of instruction supplementary to the instruction in agricultural and in trade, home economics, and industrial subjects provided for in this Act, necessary to build a well-rounded course of

training, shall be borne by the State and local communities, and no part of the cost thereof shall be borne out of the appropriations herein made. The moneys expended under the provisions of this Act, in coöperation with the States, for the salaries of teachers, supervisors, or directors of agricultural subjects, or for the salaries of teachers of trade, home economics, and industrial subjects, shall be conditioned that for each dollar of Federal money expended for such salaries the State or local community, or both, shall expend an equal amount for such salaries; and that appropriations for the training of teachers of vocational subjects, as herein provided, shall be conditioned that such money be expended for maintenance of such training and that for each dollar of Federal money so expended for maintenance, the State or local community, or both, shall expend an equal amount for the maintenance of such training.

SEC. 10. That any State may use the appropriation for agricultural purposes, or any part thereof allotted to it, under the provisions of this Act, for the salaries of teachers, supervisors, or directors of agricultural subjects, either for the salaries of teachers of such subjects in schools or classes or for the salaries of supervisors or directors of such subjects under a plan of supervision for the State to be set up by the State board, with the approval of the Federal Board for Vocational Education. That in order to receive the benefits of such appropriation for the salaries of teachers, supervisors, or directors of agricultural subjects the State Board of any State shall provide in its plan for agricultural education that such education shall be that which is under public supervision or control; that the controlling purpose of such education shall be to fit for useful employment; that such education shall be of less than college grade and be designed to meet the needs of persons over fourteen years of age who have entered upon or who are preparing to enter upon the work of the farm or of the farm home; that the State or local community, or both, shall provide the necessary plant and equipment determined upon by the State Board, with the approval of the Federal Board for Vocational Education, as the minimum requirement for such education in schools and classes in the State; that the amount expended for the maintenance of such education in any school or class receiving the benefit of such appropriation shall be not less annually than the amount fixed by the State

Board, with the approval of the Federal Board as the minimum for such schools or classes in the State; that such schools shall provide for directed or supervised practice in agriculture, either on a farm provided for by the school or other farm, for at least six months per year; that the teachers, supervisors, or directors of agricultural subjects shall have at least the minimum qualifications determined for the State by the State Board, with the approval of the Federal Board for Vocational Education.

SEC. 11. That in order to receive the benefits of the appropriation for the salaries of teachers of trade, home economics, and industrial subjects the State Board of any State shall provide in its plan for trade, home economics, and industrial education that such education shall be given in schools or classes under public supervision or control; that the controlling purpose of such education shall be to fit for useful employment; that such education shall be of less than college grade and shall be designed to meet the needs of persons over fourteen years of age who are preparing for a trade or industrial pursuit or who have entered upon the work of a trade or industrial pursuit; that the State or local community, or both, shall provide the necessary plant and equipment determined upon by the State Board, with the approval of the Federal Board for Vocational Education, as the minimum requirement in such State for education for any given trade or industrial pursuit; that the total amount expended for the maintenance of such education in any school or class receiving the benefit of such appropriation shall be not less annually than the amount fixed by the State Board, with the approval of the Federal Board, as the minimum for such schools or classes in the State; that such schools or classes giving instruction to persons who have not entered upon employment shall require that at least half of the time of such instruction be given to practical work on a useful or productive basis, such instruction to extend over not less than nine months per year and not less than thirty hours per week; that at least one-third of the sum appropriated to any State for the salaries of teachers of trade, home economics, and industrial subjects shall, if expended, be applied to part-time schools or classes for workers over fourteen years of age who have entered upon employment, and such subjects in a part-time school or class may mean any subject given to

enlarge the civic or vocational intelligence of such workers over fourteen and less than eighteen years of age; that such part-time schools or classes shall provide for not less than one hundred and forty-four hours of classroom instruction per year; that evening industrial schools shall fix the age of sixteen years as a minimum entrance requirement and shall confine instruction to that which is supplemental to the daily employment; that the teachers of any trade or industrial subject in any State shall have at least the minimum qualifications for teachers of such subject determined upon for such State by the State Board, with the approval of the Federal Board for Vocational Education: *Provided*, That for cities and towns of less than twenty-five thousand population, according to the last preceding United States census, the State Board, with the approval of the Federal Board for Vocational Education, may modify the conditions as to the length of course and hours of instruction per week for schools and classes giving instruction to those who have not entered upon employment, in order to meet the particular needs of such cities and towns.

SEC. 12. That in order for any State to receive the benefits of the appropriation in this Act for the training of teachers, supervisors, or directors of agricultural subjects, or of teachers of trade, industrial or home economics subjects, the State Board of such State shall provide in its plan for such training that the same shall be carried out under the supervision of the State Board; that such training shall be given in schools or classes under public supervision or control; that such training shall be given only to persons who have had adequate vocational experience or contact in the line of work for which they are preparing themselves as teachers, supervisors, or directors, or who are acquiring such experience or contact as a part of their training; and that the State Board, with the approval of the Federal Board, shall establish minimum requirements for such experience or contact for teachers, supervisors, or directors of agricultural subjects and for teachers of trade, industrial, and home economics subjects; that not more than sixty per centum nor less than twenty per centum of the money appropriated under this Act for the training of teachers of vocational subjects to any State for any year shall be expended for any one of the following purposes: For the preparation of teachers, supervisors, or directors of agricultural subjects, or the preparation of teachers of

trade and industrial subjects, or the preparation of teachers of home economics subjects.

SEC. 13. That in order to secure the benefits of the appropriations for the salaries of teachers, supervisors, or directors of agricultural subjects, or for the salaries of teachers of trade, home economics, and industrial subjects, or for the training of teachers as herein provided, any State shall, through the legislative authority thereof, appoint as custodian for said appropriations its State treasurer, who shall receive and provide for the proper custody and disbursements of all money paid to the State from said appropriations.

SEC. 14. That the Federal Board for Vocational Education shall annually ascertain whether the several States are using, or are prepared to use, the money received by them in accordance with the provisions of this Act. On or before the first day of January of each year the Federal Board for Vocational Education shall certify to the Secretary of the Treasury each State which has accepted the provisions of this Act and complied therewith, certifying the amounts which each State is entitled to receive under the provisions of this Act. Upon such certification the Secretary of the Treasury shall pay quarterly to the custodian for vocational education of each State the moneys to which it is entitled under the provisions of this Act. The moneys so received by the custodian for vocational education for any State shall be paid out on the requisition of the State Board as reimbursement for expenditures already incurred to such schools as are approved by said State Board and are entitled to receive such moneys under the provisions of this Act.

SEC. 15. That whenever any portion of the fund annually allotted to any State has not been expended for the purpose provided for in this Act, a sum equal to such portion shall be deducted by the Federal Board from the next succeeding annual allotment from such fund to such State.

SEC. 16. That the Federal Board for Vocational Education may withhold the allotment of moneys to any State whenever it shall be determined that such moneys are not being expended for the purposes and under the conditions of this Act.

If any allotment is withheld from any State, the State Board of such State may appeal to the Congress of the United States, and if the Con-

gress shall not direct such sum to be paid it shall be covered into the Treasury.

SEC. 17. That if any portion of the moneys received by the custodian for vocational education of any State under this Act, for any given purpose named in this Act, shall, by any action or contingency, be diminished or lost, it shall be replaced by such State, and until so replaced no subsequent appropriation for such education shall be paid to such State. No portion of any moneys appropriated under this Act for the benefit of the States shall be applied, directly or indirectly, to the purchase, erection, preservation, or repair of any building or buildings or equipment, or for the purchase or rental of lands, or for the support of any religious or privately owned or conducted school or college.

SEC. 18. That the Federal Board for Vocational Education shall make an annual report to Congress, on or before December first, on the administration of this Act and shall include in such report the reports made by the State Boards on the administration of this Act by each State and the expenditure of the money allotted to each State.

Approved, February 23, 1917.

[PUBLIC—No. 178—65TH CONGRESS.]

[S. 4557.]

An Act To provide for vocational rehabilitation and return to civil employment of disabled persons discharged from the military or naval forces of the United States, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act shall be known as the Vocational Rehabilitation Act. That the word "board," as hereinafter used in this Act, shall mean the "Federal Board for Vocational Education." That the word "bureau," as hereinafter used in this Act, shall mean the "Bureau of War-Risk Insurance."

SEC. 2. That every person who is disabled under circumstances entitling him, after discharge from the military or naval forces of the United States, to compensation under Article III of the Act entitled "An Act to amend an Act entitled 'An Act to authorize the establishment of a Bureau of War-Risk Insurance in the Treasury

Department,'" approved October sixth, nineteen hundred and seventeen, hereinafter referred to as "said Act," and who, after his discharge, in the opinion of the board, is unable to carry on a gainful occupation, to resume his former occupation, or to enter upon some other occupation, or having resumed or entered upon such occupation is unable to continue the same successfully, shall be furnished by the said board, where vocational rehabilitation is feasible, such course of vocational rehabilitation as the Board shall prescribe and provide.

The Board shall have power, and it shall be its duty, to furnish the persons included in this section suitable courses of vocational rehabilitation to be prescribed and provided by the Board, and every person electing to follow such a course of vocational rehabilitation shall, while following the same, receive monthly compensation equal to the amount of his monthly pay for the last month of his active service, or equal to the amount to which he would be entitled under Article III of said Act, whichever amount is the greater. If such person was an enlisted man at the time of his discharge, for the period during which he is so afforded a course of rehabilitation, his family shall receive compulsory allotment and family allowance according to the terms of Article II of said Act in the same manner as if he were an enlisted man, and for the purpose of computing and paying compulsory allotment and family allowance his compensation shall be treated as his monthly pay: *Provided*, That if such person willfully fails or refuses or follow the prescribed course of vocational rehabilitation which he has elected to follow, in a manner satisfactory to the Board, the said Board in its discretion may certify to that effect to the Bureau and the said Bureau shall, during such period of failure or refusal, withhold any part or all of the monthly copmensation due such person and not subject to compulsory allotment which the said Board may have determined should be withheld: *Provided, however*, That no vocational teaching shall be carried on in any hospital until the medical authorities certify that the condition of the patient is such as to justify such teaching.

The military and naval family allowance appropriation provided for in section eighteen of said Act shall be available for the payment of the family allowances provided by this section; and the military and naval compensation appropriation provided for in section nine-

teen of said Act shall be available for the payment of the monthly compensation herein provided. No compensation under Article III of said Act shall be paid for the period during which any such person is furnished by said board a course of vocational rehabilitation except as is hereinbefore provided.

SEC. 3. That the courses of vocational rehabilitation provided for under this Act shall, as far as practicable and under such conditions as the board may prescribe, be made available without cost for instruction for the benefit of any person who is disabled under circumstances entitling him, after discharge from the military or naval forces of the United States, to compensation under Article III of said Act and who is not included in section two hereof.

SEC. 4. That the Board shall have the power and it shall be its duty to provide such facilities, instructors, and courses as may be necessary to insure proper training for such persons as are required to follow such courses as herein provided; to prescribe the courses to be followed by such persons; to pay, when in the discretion of the Board such payment is necessary, the expense of travel, lodging, subsistence, and other necessary expenses of such persons while following the prescribed courses; to do all things necessary to insure vocational rehabilitation; to provide for the placement of rehabilitated persons in suitable or gainful occupations. The Board shall have the power to make such rules and regulations as may be necessary for the proper performance of its duties as prescribed by this Act, and is hereby authorized and directed to utilize, with the approval of the Secretary of Labor, the facilities of the Department of Labor, in so far as may be practicable, in the placement of rehabilitated persons in suitable or gainful occupations.

SEC. 5. That it shall also be the duty of the Board to make or cause to have made studies, investigations, and reports regarding the vocational rehabilitation of disabled persons and their placement in suitable or gainful occupations. When the Board deems it advisable, such studies, investigations, and reports may be made in coöperation with or through other departments and bureaus of the Government, and the Board in its discretion may coöperate with such public or private agencies as it may deem advisable in performing the duties imposed upon it by this Act.

SEC. 6. That all medical and surgical work or other treatment necessary to give functional and mental restoration to disabled persons prior to their discharge from the military or naval forces of the United States shall be under the control of the War Department and the Navy Department, respectively. Whenever training is employed as a therapeutic measure by the War Department or the Navy Department a plan may be established between these agencies and the Board acting in an advisory capacity to insure, in so far as medical requirements permit, a proper process of training and the proper preparation of instructors for such training. A plan may also be established between the War and Navy Departments and the Board whereby these departments shall act in an advisory capacity with the board in the care of the health of the soldier and sailor after his discharge.

The Board shall, in establishing its plans and rules and regulations for vocational training, coöperate with the War Department and the Navy Department in so far as may be necessary to effect a continuous process of vocational training.

SEC. 7. That the Board is hereby authorized and empowered to receive such gifts and donations from either public or private sources as may be offered unconditionally. All moneys received as gifts or donations shall be paid into the Treasury of the United States, and shall constitute a permanent fund, to be called the "Special fund for vocational rehabilitation," to be used under the direction of the said board, in connection with the appropriations hereby made or hereafter to be made, to defray the expenses of providing and maintaining courses of vocational rehabilitation; and a full report of all gifts and donations offered and accepted, and all disbursements therefrom, shall be submitted annually to Congress by said Board.

SEC. 8. That there is hereby appropriated, out of any money in the Treasury of the United States not otherwise appropriated, available immediately and until expended, the sum of $2,000,000 or so much thereof as may be necessary to be used by the Federal Board for Vocational Education for the purposes of this Act, to wit, for renting and remodeling buildings and quarters, repairing, maintaining, and equipping same, and for equipment and other facilities necessary for proper instruction of disabled persons, $250,000; for the preparation of instructors and salaries of instructors, supervisors, and other

experts, including necessary traveling expenses, $545,000; for traveling expenses of disabled persons in connection with training and for lodging, subsistence, and other necessary expenses in special cases of persons following prescribed courses, $250,000; for tuition for disabled persons pursuing courses in existing institutions, public or private, $545,000; for the placement and supervision after placement of vocationally rehabilitated persons, $45,000; for studies, investigations, reports, and preparation of special courses of instruction, $55,000; for miscellaneous contingencies, including special mechanical appliances necessary in special cases for disabled men, $110,000; and for the administrative expenses of said Board incident to performing the duties imposed by this Act, including salaries of such assistants, experts, clerks, and other employees in the District of Columbia or elsewhere as the Board may deem necessary, actual traveling and other necessary expenses incurred by the members of the Board and by its employees under its orders, including attendance at meetings of educational associations and other organizations, rent and equipment of offices in the District of Columbia and elsewhere, purchase of books of reference, law books, and periodicals, stationery, typewriters and exchange thereof, miscellaneous supplies, postage on foreign mail, printing and binding to be done at the Government Printing Office, and all other necessary expenses, $200,000.

SEC. 9. That said Board shall file with the Clerk of the House and the Secretary of the Senate on July first and every three months thereafter, for the information of the Congress, an itemized account of all expenditures made under this Act, including names and salaries of employees. Said Board shall also make an annual report to the Congress of its doings under this Act on or before December first of each year.

SEC. 10. That section three hundred and four of the Act entitled "An Act to authorize the establishment of a Bureau of War Risk Insurance in the Treasury Department" approved September second, nineteen hundred and fourteen, as amended, is hereby repealed.

SEC. 11. No person of draft age physically fit for military service shall be exempted from such service on account of being employed under the terms of this Act.

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